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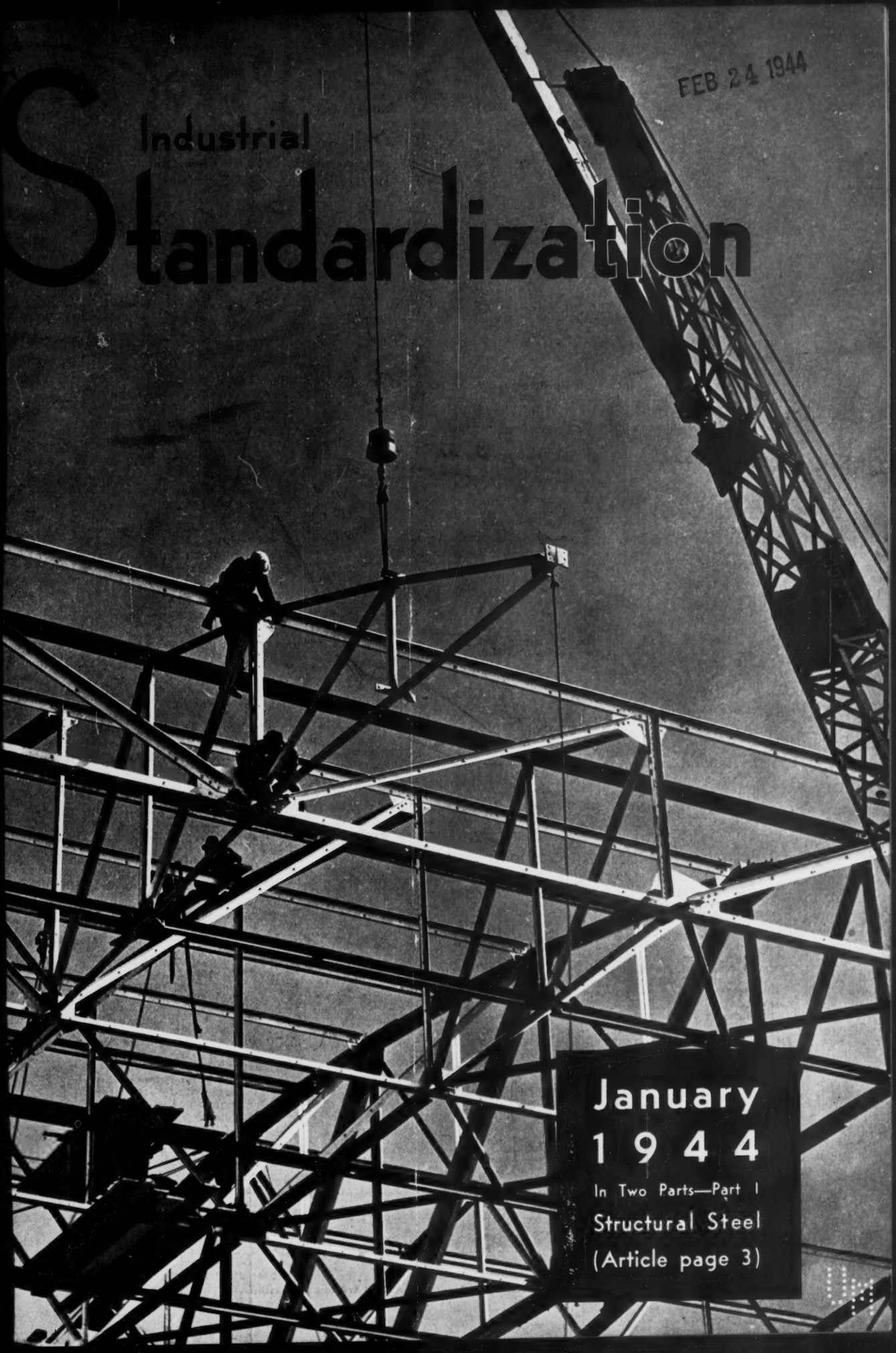
Industrial Standardization



January
1944

In Two Parts—Part I
Structural Steel
(Article page 3)

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RUTH E. MASON, Editor

Our Front Cover: Structural steel in a new Government construction.—*Charles Phelps Cushing.*

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ASA

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Standardization is dynamic, not static. It means not to stand still, but to move forward together.

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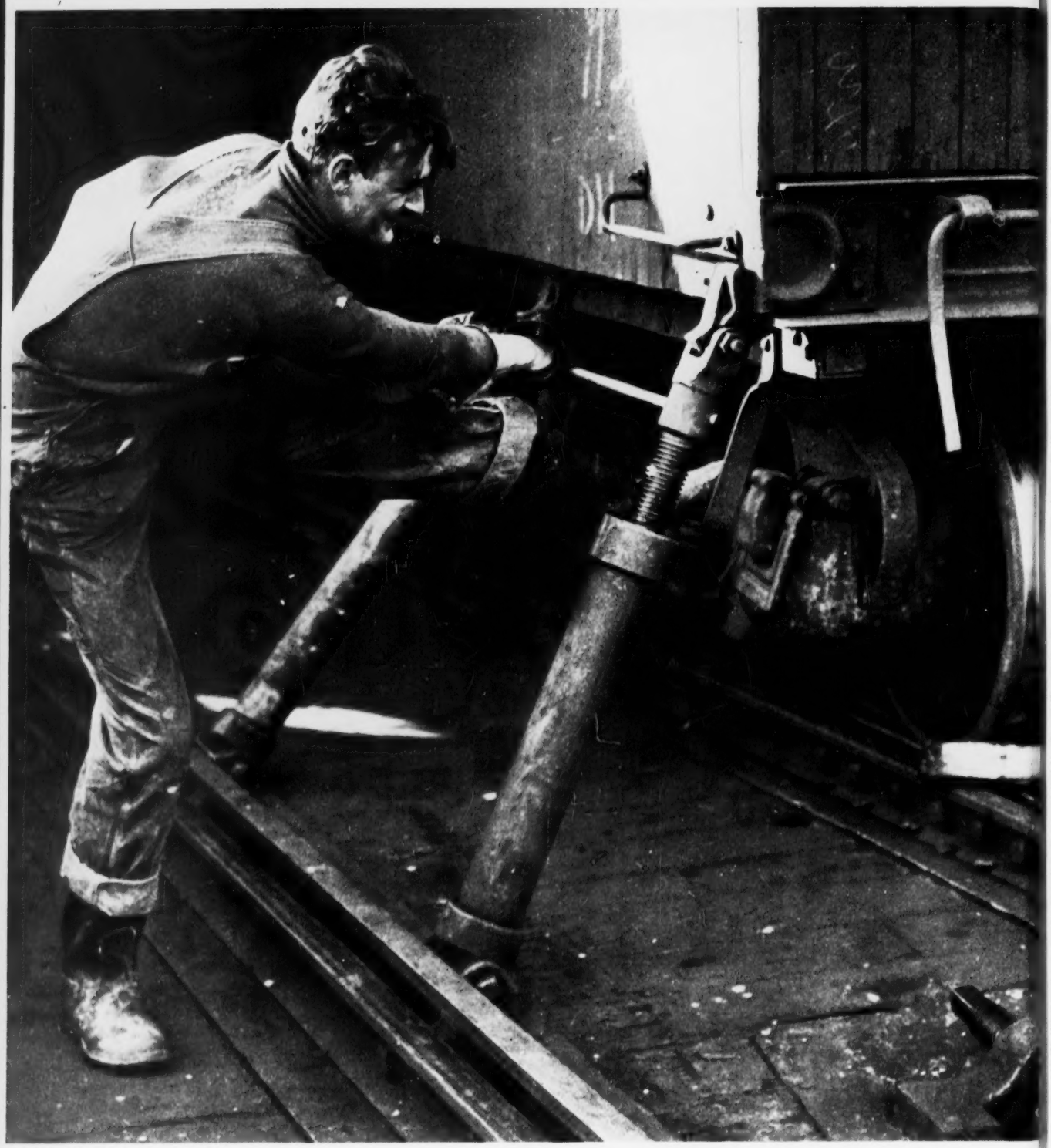


Freight cars aboard a Great Lakes car ferry
are braced with powerful screw-jacks.

Safety Standard for Jacks Cuts Chances of Accidents

Recommends safe methods of operating, loading, and caring for jacks in commercial use

THE commercial use of jacks—in building construction, machine shops, defense plants, ship yards, and docks—has presented a safety problem which has been under consideration for some years. Despite the increasing use of all types of such equipment as industry has expanded and speeded up its operations, no standard for safe practices in the use of jacks had been available until the new American Standard Safety Code for Jacks (B30.1-1943) was approved by the American Standards Association late in 1943.

Guide to Manufacturers and Users

The new standard is intended to serve as a guide to manufacturers, users, insurance carriers, and regulatory authorities in providing safe methods of operating and loading jacks (with the exception of those supplied as standard equipment with automobiles) as well as for keeping them in good working condition. If its recommendations are followed, it should provide reasonable safety for persons and property. The standard has been prepared in a form suitable for adoption by regulatory authorities.

A jack is an appliance for lifting and lowering, or moving a load horizontally, by application of a pushing force, and may be of the lever and ratchet, screw, or hydraulic type. Unless proper precautions are taken in handling and loading the jack, serious damage to both persons and property may result. The jack may fail to hold the load off the ground, or if improperly placed the load may fall off the jack. To prevent this, the standard recommends that the correct type of jack be chosen for each type of job, that the operator make sure that the jack used has a rating sufficient to lift and sustain the load, and that the jack be properly aligned with the load.

Includes Rules on Design, Construction, and Operation

Other recommendations include general rules on design and construction, as well as on safe operation. Every jack shall be equipped with a stop to prevent it from overtraveling, the code provides. The rated load shall be legally and permanently marked in a prominent location on the jack, and to prevent overloading the manufacturer shall designate the intended supporting point of the load and the maximum permissible length of lever and force to be applied. A test to assure that the jack is capable of doing the work expected of it is required. This test provides that the jack shall be subjected to a load equal to its rated load, lifted to within one inch of its full travel, and an additional load equal to one quarter of the rated load placed on it. If under this test the material in any part of the jack shows evidence of being stressed beyond the yield point, the jack shall be disqualified for service.

Maintenance and Care Important

One of the important means for assuring safe operation of jacks is their maintenance and care. The new standard takes this into account and recommends that jacks shall be properly lubricated at regular intervals; when screws are exposed they shall be frequently wiped and lubricated; and the jack shall be cleaned of sand and grit.

Regular inspection by a capable man who shall be held responsible for the inspection is recommended.

When it is necessary to repair jacks, they shall be subjected to test and shall meet the same requirements as when new, the code provides.

Comments Welcomed

The new Safety Code for Jacks was originally intended to be a part of the Safety Code for Cranes, Derricks, and Hoists, which was approved by the American Standards Association in 1942. A section on jacks was prepared and circulated for criticism and comment in 1932 and again in 1937. In 1938, after replies on the section were received, the committee decided to submit the proposal as a separate code. The code was prepared by a subcommittee of the ASA Sectional Committee on Safety Code for Cranes, Derricks, and Hoists. This committee works under the leadership of the Bureau of Yards and Docks, U. S. Navy Department, and the American Society of Mechanical Engineers. E. W. Carruthers, Assistant Engineer of the Pennsylvania Railroad, is chairman of the subcommittee on jacks. Comments and criticisms on the effectiveness of the code will be welcomed by the committee and by the sponsor organizations. Comments may be addressed to the ASA or to the committee chairman.

The American Standard Safety Code for Jacks (B30.1-1943) may be obtained from the American Standards Association, 29 West 39th Street, New York, 18, N. Y., at 30 cents per copy.

The American Society of Mechanical Engineers and the Bureau of Yards and Docks, U. S. Navy Department, are the sponsor organizations.

ASA Completing Assignment On Radio Components for Armed Forces

THE American Standards Association plans to complete by March 1 the work now assigned to it on standards for radio components for use by the Armed Forces. A letter announcing these plans is being sent to the engineers and technical experts in industry and in the Armed Forces who have cooperated in the work on these radio standards during the past two years. The announcement follows:

"The American Standards Association is completing the work on standards for radio components now assigned to it about March 1. We are sure you will be interested in the following information in regard to the program as a whole and the modifications in it which are now in process.

"You will recall that in March 1942 the War Production Board enlisted the services of the American Standards Association for the development of a series of American War Standards for components used in radio and electronic equipment. The work is being carried out through a series of task committees, upon each of which Army, Navy, prime contractors, and component manufacturers are represented. Fourteen standards have already been approved as follows:

- Ceramic Radio Insulating Materials, Class L (C75.1-1943)
- Steatite Radio Insulators (C75.2-1943 First revision)
- Fixed Mica-Dielectric Capacitors (C75.3-1942)
- Ceramic Radio Dielectric Materials, Class H (C75.4-1943)
- External Meter Resistors (Ferrule Terminal Styles) (C75.5-1943)
- Glass-Bonded Mica Radio Insulators (C75.6-1943)
- Fixed Composition Resistors (C75.7-1943)
- Glass Radio Insulators (C75.8-1943)
- Crystal Unit CR-1()/AR (C75.11-1944)
- Porcelain Radio Insulators (C75.14-1944)
- Electrical Indicating Instruments (2½- and 3½-Inch, Round, Flush-Mounting, Panel-Type) (C39.2-1944 First Revision)
- Shock-Testing Mechanism for Electrical Indicating Instruments (2½- and 3½-Inch, Round, Flush-Mounting, Panel-Type) (C39.3-1943)
- Dimensions for External Radio-Frequency Thermocouple Converters (120 Milliamperes to 10 Amperes, Inclusive) (C39.4-1943)
- External Ammeter Shunts for Panel-Type Instruments (C39.5-1943)

"At the time this project was initiated, the Armed Forces could not spare the personnel required to handle such a program. Since then conditions have changed, and the Army-Navy Electronics Standards Agency (ANESA) was established recently to take over this work. To avoid any substantial loss of effort already expended, seven of the subjects which are well toward completion will be concluded under the war procedure of the Association, and the remaining specifications will be handled exclusively by ANESA.

"The projects being completed by the American Standards Association cover:

- Power-type Wire-Wound Rheostats (C75.9)
- Variable Wire-Wound Resistors (Low Operating Temperatures) (C75.10)
- Dynamotors (C75.13)
- Fixed Ceramic-Dielectric Capacitors (Temperature Compensating Type) (C75.12)
- Toggle Switches (C75.15)
- Fixed Paper-Dielectric Capacitors (Hermetically Sealed in Metallic Cases) (C75.16)
- Method of Noise-Testing Fixed Composition Resistors (C75.17)

"On completion of these standards, some 20 American War Standards will have been issued as an aid to the radio-electronic field. All standards that have been approved to date have been adopted by the Signal Corps and the Radio Division of the Bureau of Ships for procurement purposes.

"In completing the work, ANESA will utilize the current ASA drafts of the remaining specifications. The existing ASA task groups which have been developing the standards will be disbanded, as ANESA will seek the cooperation of industry by other means.

"The American Standards Association bespeaks for ANESA the same whole-hearted cooperation from industry that it itself has received from the Army and Navy, prime contractors, and component manufacturers. Through the efforts of all of these, the standardization of radio-electronic components has been well established and we may look forward to a successful conclusion by ANESA and the Armed Forces of the program covering the completion and the application of the standards."

Trolley Wire Standard Widely Used

"Standard shapes and dimensions for hard drawn copper trolley wire, approved in 1940 by the American Society for Testing Materials and the American Standards Association, have been adopted by all of the leading wire manufacturers, and trolley wire purchased today is made in accordance with the shapes and sizes specified," A. L. Johnston points out in an article "Standard Trolley Wire Sizes and Shapes," *Mining Congress Journal*, November, 1943.

The standard referred to is the American Standard for Copper Trolley Wire (E4.6-1940; ASTM B47-39), available from the ASA at 25 cents.

The article outlines the standard specifications for the sizes of wire used in mining service, and explains the interchangeability of fittings. It emphasizes the importance of using the standard designations on orders for line material, particularly in connection with its use in mining.

These steel columns symbolize the strength of structural steel construction.

by T. R. Higgins[1]

Member, ASA Sectional Committee on Building Requirements for Structural Steel

Structural Steel Standard Is Milestone in Building Program

APPROVAL of the American Standard for Structural Steel (Riveted, Bolted, or Welded Connections), A57.1-1943, as one of a related series of basic standards having to do with building code requirements, marks an important milestone towards the goal set by the American Standards Association to develop standards for all the subjects commonly included in municipal building regulations.

Most post-war programs assign such an important role to new construction that the modernization and standardization of all of these building regulations is highly deserving of early attention. Nearly all students of our national economy are in agreement that lack of uniformity among the hundreds of building codes now in force and, in many cases, failure to keep abreast of modern trends and developments have placed a serious handicap on the construction industry. Now that we appear to be approaching a period in which a large volume of construction will be required—almost all of which will come within the jurisdiction of local building codes—action is imperative.

World War I Experience Important

Oddly enough, the movement for greater standardization in the structural steel fabricating industry, the fruits of which have been given recognition by the American Standards Association in the midst of World War II, owes its beginning largely to experience gained in World War I. For it was the pressure for more and more production during that emergency which focused attention upon the handicaps resulting from a lack of uniformity in design and fabricating practice. To be sure, considerable progress had been achieved in the field of bridge engineering. But it was obvious that, in a number of ways, the practice with respect to buildings was, of necessity, far from analogous with that which had been developed for bridges.

Eminent Committee Prepared Early Edition

Soon after the last war a committee was selected from among the leading talent in the engineering, architectural, and academic fields to prepare a standard specification covering all phases of the use of structural steel in building construction. The work of this eminent committee has been so far-reaching it seems only fitting that its roster should be inscribed on these pages at this time. It consisted of:

George F. Swain—

Member American Society of Civil Engineers; member American Society of Mechanical Engineers; member British Institution of Civil Engineers; member American Railway Engineering Association; past-president American Society of Civil Engineers; Professor of Civil Engineering, Harvard University.

Milo S. Ketchum—

Member American Society of Civil Engineers; member American Railway Engineering Association; Dean of the College of Engineering, and Director of the Engineering Experiment Station of the University of Illinois.

E. R. Graham—

of Graham, Anderson, Probst & White, Architects, Chicago, Illinois.

W. J. Thomas—

Member American Society of Civil Engineers; Chief Engineer, George B. Post & Sons, Architects, New York.

[1] Chief engineer, American Institute of Steel Construction.

Wilbur J. Watson—

Member American Society of Civil Engineers; member American Railway Engineering Association; President, Watson Engineering Company, Cleveland, Ohio.

The document which these men prepared was formally adopted by the American Institute of Steel Construction in 1923 as its Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings. How well the work was done may be seen by comparing the text of the recently approved American Standard with the text these men drafted 20 years ago. Changes have been made, it is true. Such changes are inevitable if a specification is to keep abreast of technological developments, as it most certainly should. The American Institute of Steel Construction has continuously maintained a Committee on Specifications, the objective of which has been to keep this specification up-to-date with progress in design thought, and fabricating practice; and has also called to its assistance a Board of Technical Review, comprising a large number of structural specialists throughout the country, to whom the progressive changes of the specification have been submitted for criticism prior to adoption. Research has explored many phases of structural design which were but partially revealed to the practicing engineer of two decades ago—an interval of time which, by the way, is more than one-third of the elapsed time since the erection of the first skeleton-frame steel building. Yet only two of the departures from the specifications originally adopted by the American Institute of Steel Construction are deserving of particular mention at this time.

ASA Sectional Committee On Structural Steel

A broadly representative sectional committee prepared the American Standard Building Code Requirements for Structural Steel (Riveted, Bolted, or Welded Construction) (A57.1-1943). Members of the committee are:

B. F. Hastings, American Institute of Steel Construction, *Acting Chairman and Acting Secretary*

American Institute of Steel Construction, *F. H. Frankland; B. F. Hastings (alternate)*
American Society of Civil Engineers, *C. T. Morris*
American Institute of Architects, *Andre Halasz*
American Institute of Bolt, Nut and Rivet Manufacturers, *W. C. Stewart*
American Iron and Steel Institute, *B. L. Wood*
American Society for Testing Materials, *H. H. Morgan*
American Welding Society, *T. R. Higgins*
Associated General Contractors of America, *E. M. Rust*
Building Officials Conference of America, Inc., *J. A. Clarke (alternate)*
Federal Works Agency, Public Buildings Administration, *C. W. Barber*
National Bureau of Standards, U. S. Department of Commerce, *H. L. Whittemore; W. R. Osgood (alternate)*
National Electrical Manufacturers Association, *J. B. Tinnon*
Pacific Coast Building Officials Conference, *Hal Colling*
Steel Joist Institute, *G. F. Bateson*
Members at Large, *J. L. Edwards; H. W. Hunter; C. A. Willson*
Ex-officio, *R. P. Miller, Chairman, Building Code Correlating Committee; G. N. Thompson, Vice-Chairman, Building Code Correlating Committee*

This committee works under the joint sponsorship of the American Institute of Steel Construction and the American Society of Civil Engineers.

Copies of the standard may be obtained from the American Standards Association at 40 cents each.

Allowable Tensile Stress Raised

In 1936, after the American Society for Testing Materials had raised the minimum strength requirements for structural steel some ten per cent above those which obtained in 1923, the basic allowable tensile stress in the Institute's standard specification was raised in an equivalent ratio. In essence, this change merely restored the balance between the permitted working stresses and the assured physical properties to that which had existed prior to improvements in the manufacture of structural steel.

The other significant change, which the original committee could hardly have anticipated in its deliberations, is in reference to the use of welding in building construction. It was not until about 1929 that the introduction of the shielded arc progress into this country awakened among structural engineers a widespread confidence in welding as a prime connector for important structural elements of a building. Even after this important development, considerable study and research was necessary before satisfactory and proven techniques could be reduced to anything like standard practices in the fabrication and erection of structural steel. But when, in 1941, the American Welding Society adopted its present Code for Arc and Gas Welding in Building Construction, the American Institute of Steel Construction, which had taken a keen interest in the development of this code, felt that standardization in welding practices had arrived at the point where its own specifications should be harmonized with conditions that were peculiar to the application of welding in the fabrication of structural steel for buildings. It was recognized by both bodies that this newer technique would in all probability give rise to later refinements and advancements under the impetus of more widespread use, and hence that later revisions to the standards would be inevitable. Nevertheless, the text that was adopted is fundamentally sound and, with full realization of the hazards which attend the prophesying of future technical developments, I venture to predict that the bulk of these newer standards will stand the test of time. American Standard A57.1-1943 embraces these new provisions.

Society of Civil Engineers Played Important Role

Any discussion of the factors whose free interplay has led up to the development of these American Standard Building Requirements for Structural Steel would be incomplete without mention of one other very important force. Indeed, the contributions of this group have been so numerous and far-reaching that it would be difficult to over-emphasize their importance. I refer to the American Society of Civil Engineers, co-sponsors in the development of the standard. From the earliest beginnings in the development of steel frame buildings, its members have played the leading role.

ASA Building Code Program

The program of the 15 committees under the supervision of the Building Code Correlating Committee is showing encouraging progress despite interruptions to committee schedules due to war demands. The program contemplates the preparation of a comprehensive group of standards covering subjects customarily treated in a building code. It is expected that these standards will be used in developing a basic American Standard Building Code. The new standard for structural steel is the sixth in the series to be completed. The status of the work of these committees is as follows:

Building Code Standards Approved and in Print—

Methods of Test of Door Assemblies (A2.2-1942) 25¢
Portable Steel and Wood Grandstands (Z20.1-1941) 60¢
Building Requirements for Reinforced Gypsum Concrete (A59.1-1941) 25¢
Fire Tests of Building Construction and Materials (A2.1-1941) 25¢
Building Exits Code (A9.1-1942) $1.00
Building Code Requirements for Structural Steel (Riveted, Bolted, or Welded Construction) (A57.1-1943) 40¢

New Standards Recently Approved—

Building Code Requirements for Masonry (A41.1-1944)
Administrative Requirements for Building Codes (A55.1-1944)

Proposed Standard Approved by Sectional Committee Now Being Submitted to ASA—

Building Code Requirements for Steel Joist Construction (A57)

In Final Stage of Development in Sectional Committees—

Building Code Requirements for Light and Ventilation (A53)
Building Code Requirements for Excavations and Foundations (A56)
Building Code Requirements for Signs and Outdoor Display Structures (A60)
Building Code Requirements for Minimum Design Loads in Buildings (A58)

Active Work Under Way—

Building Code Requirements for Fire Protection and Fire Resistance (A51)
Building Code Requirements for Chimneys and Heating Appliances (A58)

Committee Work to Be Started—

Light Gage Steel Construction (A57)
Reinforced Brick Masonry (A41)
Building Code Requirements for Cast Iron (A57)

For it is to these men, whose responsibility it was to engineer these structures, that the fabricating industry has had to turn for guidance and approval. Much of the research which has brought practice to its present high position in public esteem was performed under the direction of the American Society of Civil Engineers. And its Proceedings and Transactions have provided a forum for the freest exchange of knowledge to the end that each man's study could enjoy the benefits of the findings of all who were devoted to the improvement of structural practices.

Emergency Specifications Based on Committee's Work

In view of the industrial climate which existed at the close of the last war and which was so largely responsible for the Institute's Specification for the Design, Fabrication, and Erection of Structural Steel—a climate in which all important industrial practices were being studied with an eye to insuring the maximum industrial output in the event of a future war emergency—it may at first seem strange that when the present emergency did arise it was not the Standard Specification which was finally to govern the use of structural steel but a National Emergency Specification. Yet, when all the facts are considered, it will be seen that the objective fixed in those early post-war years did, in fact, fulfill expectations when the emergency arose.

In the first place much of the construction required in this war had already been engineered prior to the developments requiring the adoption of the War Production Board's Emergency Specifications. And, thanks to the standardization which had been achieved in the intervening years, none of the confusion with respect to design and fabricating practices, experienced in the earlier emergency, existed at this time.

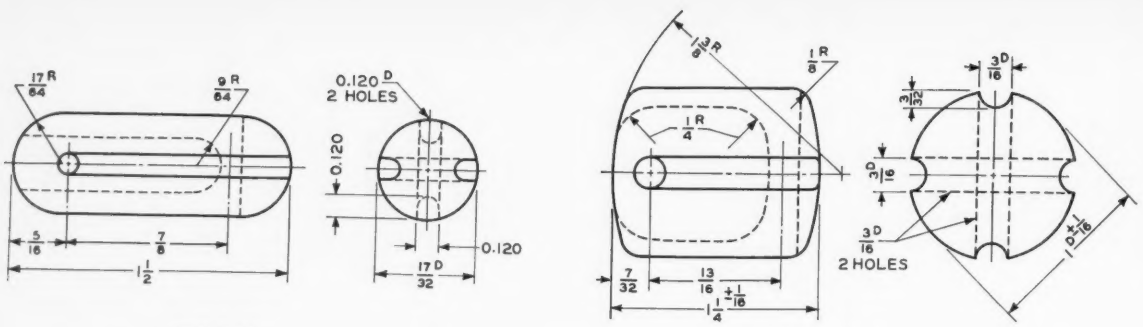
Stresses Changed to Conserve Steel

As a matter of fact, in only one important respect does the Emergency Specification differ from the Institute's standard specifications. Because of the unprecedented demand for steel generated by the gigantic war program, it became necessary to conserve this vital material wherever possible. The established working stresses for structural steel, therefore, were increased in the Emergency Specification, in some cases by as much as 20 per cent, so that, by assigning more work to a given amount of steel, an over-all saving would be realized. Such a contingency could hardly have been anticipated prior to the war; in fact it did not arise until the construction part of the war program was well advanced. And, even had it been foreseen, it is debatable whether any widespread support would have been given a proposal to adopt the higher stresses in advance of the emergency which dictated their use.

ASA Committee Speeds Emergency Work

It may be of interest to note that, when this situation became apparent, the War Production Board, acting through the organization already set up by the American Standards Association and assisted by the affected branches of the armed services, was able to provide emergency regulations in a remarkably short space of time. Only because of the vast amount of study which had already gone into the development of nation-wide standards to cover the activities of this vital industry was such speed made possible. And, only because the quality of the product of this industry had been enhanced through unification of practice was there sufficient assurance of safety when, in order to economize to the utmost on the use of this precious commodity, working stresses were increased to a limit some fifty percent higher than that which was in use during the last war.

Thus, in a period of but two decades, this movement for standardization had made a truly great contribution in making America strong.



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TYPE DESIGNATION TO BE IN THE FOLLOWING FORM

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New War Standards on Glass And Porcelain Radio Insulators

by H. R. Wilsey

Radio Engineer, American Standards Association

SINCE approval of the final War Standard for insulators on January 14, 1944, there has been available to industry and to the Armed Forces a series of American War Standards covering the entire field of ceramic insulation for communication purposes, which defines standard insulators fabricated from specific grades of material.

The American War Standard, Glass Radio Insulators (C75.8-1943) was approved by the American Standards Association on November 29, 1943, and on January 14, 1944, approval was completed on Porcelain Radio Insulators (C75.14-1944).

Approval of these two standards brings to a conclusion the work of Subcommittee 1, on Insulating Material Specifications for the Military Services, of the War Committee on Radio. This subcommittee has been functioning under the chairmanship and able direction of Dr. Alfred N. Goldsmith.

Approval was granted by ASA on the basic material specification first completed by Subcommittee 1, Ceramic Radio Insulating Materials, Class L (C75.1-1943), on February 26 of last year. This standard describes the significant physical and chemical characteristics of ceramic materials and outlines the methods of test for such characteristics. Since approval of this basic standard, Subcommittee 1 and its several task groups have completed work on a second basic standard, Ceramic Radio Dielectric Materials, Class H (C75.4-1943), as well as on standards for steatite radio insulators, glass-bonded mica radio insulators, glass radio insulators, and porcelain radio insulators. These complete the work necessary to cover the subject of ceramic insulation to the extent required by the Armed Forces.

The standards on both glass and porcelain insulators incorporate essentially the same features originally established in the first insulator standard approved, Steatite Radio Insulators (C75.2-1943). That is, standard insulators for fabrication from each material have been specified and definite requirements for dimensional tolerances and finishes have been included in

War Standards For Ceramic Radio Insulators

Ceramic Radio Insulating Materials, Class L (C75.1-1943) 20¢

Steatite Radio Insulators (C75.2-1943) 50¢

Ceramic Radio Dielectric Materials, Class H (C75.4-1943) 20¢

Glass-Bonded Mica Radio Insulators (C75.6-1943) 25¢

Glass Radio Insulators (C75.8-1943) 50¢

Porcelain Radio Insulators (C75.14-1944) 50¢

each case as required. Included also is an appendix giving design criteria as recommended by leading manufacturers in each field. This appendix is intended to help design engineers not only in the radio manufacturing industry but also in the insulation industry itself. All four insulator standards outline tests intended to determine the ability of the completed insulators to stand up in service under any of the conditions encountered by the various branches of our Armed Forces.

The Radio Division, Bureau of Ships, Navy Department, and the Signal Corps of the U. S. Army have adopted these new standards for procurement purposes. It is anticipated that they will be used in designing new equipment, and, where practicable, in redesigning existing equipment and for replacement purposes.

These new War Standards were prepared through the coordinated efforts of representatives of industry and the Armed Forces at the request of the War Production Board.

The committee that developed the standard for glass radio insulators was headed by J. L. Hanigan, Corning Glass Works. Its membership included: Roy J. Black, Owens-Corning Fiberglas Company; B. R. Boymel, Navy Department, Bureau of Ships, (J. R. O'Brien, *Alternate*); K. H. Brandt, Fort Monmouth Signal Laboratory; T. M. Caven, Camp Evans Signal Laboratory; W. A. Evans, Bell Telephone Laboratories, (K. G. Coutlee, *Alternate*); A. F. Gassen, Fort Monmouth Signal Laboratory; Harold Miller, Aircraft Radio Laboratory; Jack Mohr, T. C. Wheaton Company, (Edward Haggerthy, *Alternate*); W. R. Schlehr, Demuth Glass Works, Inc, (J. P. Kearney, *Alternate*); H. R. Terhune, Radio Corporation of America; H. R. Wilsey, American Standards Association, *Secretary*.

The committee that developed the standard for porcelain radio insulators was headed by G. I. Gilchrest, Westinghouse Electric & Manufacturing Company, (E. H. Fischer, *Alternate*). Its membership included: B. R. Boymel, Navy Department, Bureau of Ships (J. R. O'Brien, *Alternate*); T. M. Caven, Camp Evans Signal Laboratory; Sam DiVita, Fort Monmouth Signal Laboratory; W. A. Evans, Bell Telephone Laboratories, (K. G. Coutlee, *Alternate*); R. W. Ferguson, Star Porcelain Company; F. P. Hall, Pass & Seymour, Inc; Lt (jg) J. H. Koenig, Army-Navy Electronics Production Agency; J. S. Leibson, General Electric Company; R. L. McCoy, Locke Insulator Corporation; George L. McCreery, Ohio Brass Company, (P. M. Ross, *Alternate*); E. M. Meyer, Victor Insulators, Inc; Harold Miller, Aircraft Radio Laboratory; L. P. O'Brien, Porcelain Products, Inc, (F. E. Pope, *Alternate*); N. H. Snyder, National Ceramic Company; K. E. Stettinius, Lapp Insulator Company, Inc; H. R. Terhune, Radio Corporation of America; H. R. Wilsey, American Standards Association, *Secretary*.

"Dictionary" of Retail Terms First on ACUCG Program

THE Advisory Committee on Ultimate Consumer Goods of the American Standards Association, at its meeting January 13, voted to develop, as soon as possible, standard definitions of technical terms for commodities sold at retail. It is the object of this committee to produce a "dictionary" of the common terms used in the retail trade. This project does not necessarily include an attempt to draw up specifications for the commodity itself, but is an effort to provide a basis for agreement on the terms ordinarily applied to consumer goods, and to remove the possibility of confusion and misunderstanding. The terms to be defined first will probably be those connected with the cost-of-living items. Work on the project will start immediately.

Irwin D. Wolf, vice-president of Kaufmann Department Stores in Pittsburgh, Pa., representing the National Retail Dry Goods Association, was re-elected chairman of the ACUCG, and Dr. Dorothy Houghton, on the staff of Teachers College, Columbia University, and representing the American Home Economics Association, was elected vice-chairman.

It was announced that the following five new groups would be represented on the committee: the Cotton Textile Institute, American Retail Federation, Limited Price Variety Store, National Association of Dyers and Cleaners, and the American Federation of Labor. The Cotton Textile Institute is the first trade association representing manufacturers to hold membership on the ACUCG, and the American Federation of Labor is the first labor group to hold membership.

The ACUCG voted to initiate work aimed at extending the current standards for Body Sizes for Boys' Garments to include standards for younger and older boys, as well as a complete size standard for girls.

In the field of testing, the committee's activities will

Irwin D. Wolf
Chairman, ASA Advisory Committee on Ultimate Consumer Goods

be directed toward a study of current test methods with a view toward arriving at a common basis for the interpretation of test results.

The work of the committee on sheets and sheeting materials, technical sections of which had been incorporated in OPA regulations on sheets and sheetings, will be reviewed by a post-war planning committee for possible adaptation as an American Standard.

The Chairman announced the appointment of an Executive Committee and a Post-War Planning Committee. I. D. Wolf will serve as chairman of the Executive Committee. Other members are: Dr. D. Houghton; Dr. Faith Williams, representing the American Association of University Women; and Max Gertz who represents the NRDGA. Max Gertz is chairman of the Post-War Planning Committee, while Ardenia Chapman of the American Home Economics Association, Sherman Booth of the National Bureau of Standards, and Dr. Jules Labarthe of the National Retail Dry Goods Association, are members.

War Committee to Develop Photographic Equipment Standards

A NEW war committee of the American Standards Association to develop standards for important photographic and cinematographic equipment used by the Armed Forces held its organization meeting December 15. This committee, set up by the ASA at the request of the War Production Board on the initiative of the Army Pictorial Service, includes representatives of the Signal Corps; Air Force; Photographic Section, Bureau of Aeronautics, U. S. Navy; Engineers Corps; and Marine Corps; as well as manufacturers of photographic and cinematographic equipment. The Society of Motion Picture Engineers is represented, and the Research Council of the Academy of Motion Picture Arts and Sciences is being invited to appoint a representative.

Shepard Heads Committee

R. B. Shepard of the War Production Board was appointed chairman of the new committee. J. W. McNair of the ASA staff will serve as its secretary.

Following recommendations of the Armed Forces Committee under the chairmanship of Captain Lloyd Goldsmith of the Army Pictorial Service, the committee agreed to start immediately on a number of jobs. Probably the most important of these is development of a specification for a service model 16-mm sound-film projector. These sound-film projectors are used in every battle zone for the entertainment of troops as well as in the training of troops. They must be constructed to stand up under conditions of transport and use in combat areas, and must have interchangeable parts.

Work Assigned to Task Committees

The committee made definite assignment of all jobs requested by the Armed Forces to task committees that were instructed to proceed with the utmost speed in the development of the specifications. In several cases, existing subcommittees of the ASA Committee on Photography (Z38) augmented by additional representatives from the Armed Forces, were assigned jobs. Four task committees recommended by the Society of Motion Picture Engineers were given jobs to do, and in three cases the Society of Motion Picture Engineers and the Research Council of the Academy of Motion Picture Arts and Sciences were requested to recommend committees.

In addition to the 16-mm sound-film projector, other jobs to be undertaken will include:

1. Development of a standard specification for slide-film projectors, to include both manually and electrically operated projectors for 35-mm slide-film and 2x2-inch slides. Special attention will be given to maximum allowable aperture temperatures; and also to dimensional standards, interchangeability of parts, interchangeability of projection lamps, and standard lens barrel diameters to simplify manufacture, and also to allow damaged projectors to be repaired conveniently in the field.
2. Development of a standard specification for measuring the performance characteristics of still camera shutters, a matter that has long been plaguing non-military photographers. This will be a performance standard including operating temperature range, standards of nomenclature, and test procedures.
3. Development of a standard performance specification including characteristics and methods of test for photographic exposure meters. This will be tied in closely with the American Standard Photographic Exposure Computer previously developed for the U. S. Navy. Special attention will be paid to operating temperature range, degree of accuracy, and test procedures.
4. Development of a performance and test specification for still picture contact printers. The work of a subcommittee of the regular ASA Committee on Photography will serve as a basis for this; and the finished job will include test procedure, and the source and use of test screens.
5. Development of a specification for 16-mm motion picture test films. Special attention will be given to the source of supply of test films so that test films will be available to all manufacturers and users of 16-mm equipment.
6. Development of a specification for standards of quality and control of processing and printing 16-mm film, with special attention to test procedure and methods and standards of testing.
7. Development of a specification for the size and shape of 16-mm and 35-mm picture apertures of optical reduction printers and 16-mm contact printers.
8. Development of a specification for the size and shape of the photographic apertures of 16-mm and 35-mm motion picture cameras.
9. Development of a specification for the size and shape of 16-mm and 35-mm motion picture camera view-finder apertures.
10. Development of a specification for a standard registration distance for 16-mm and 35-mm camera lenses.
11. Development of a specification for a 35-mm motion picture camera drive motor to operate from either 12 or 24 volts direct current, both of which voltages are used by the services.
12. Development of a specification for camera noise measurements and acceptable limits for 16-mm and 35-mm sound motion picture cameras, sizes that are widely used in civilian life as well as by the services. Preliminary studies on this subject already made by the Research Council of the Academy of Motion Picture Arts and Sciences will serve as a springboard to the task group drafting the standard.
13. Development of a performance specification for 16-mm portable projection screen, with special attention to matt surface and metallic surfaced screens for Vectograph and color projection. This job will also include standardization of screen sizes.

War Work on Increase In ASA Electrical Committees

THE impact of the war was felt during the past year in the work of the ASA committees on electrical projects, the most active committees being the five which have been working on war standards. These five committees reported 13 war standards completed and approved, and 12 others nearing completion. Committees working on regular standards reported that some of the standards already approved have been useful without change in the war effort, while others have been revised to meet emergency conditions. The demands of war production have handicapped many of the regular committees in carrying on their work and some of them have decided to postpone further activity until the end of the war releases the technicians needed.

Eleven regular American Standards recommended by the Electrical Standards Committee were approved by the American Standards Association during the year, in addition to the 13 war standards.

The reports of the committees given below show how the work is progressing on those projects under the Electrical Standards Committee which are still active. The organizations sponsoring the work are listed following the report of each committee. The names of the chairman and secretary of the committee are given in those cases where the Electrical Standards Committee itself is acting as sponsor.

National Electrical Code (C1)—

A technical subcommittee on welding has almost finished a study of welding operations and equipment from the National Electrical Code viewpoint. Preliminary reports on the results of the study already have had wide circulation to the sectional committee. Recommendations of the subcommittee for revisions or additions to the National Electrical Code will be considered by the Emergency Committee. This committee was appointed by the sectional committee to act on Interim Amendments to the National Electrical Code for the duration. A technical subcommittee is being organized to study infra-red lamp heating equipment and suitable safeguards for such equipment. A meeting of the sectional committee will be called at a date not yet determined to consider the next edition of the Code.—*National Fire Protection Association.*

Code for Protection Against Lightning (C5)—

During the past two years Part III, covering Protection of Structures containing Inflammable Liquids and Gases, has been under consideration by the sectional committee. One of the important problems has been a new section on structures for storage of powder or explosives which was added to the proposed revision. Comments and criticisms on the proposed requirements were requested from the Institute of Makers of Explosives and the Bureau of Explosives. The comments have not yet been received but the Institute has requested formal representation on the sectional committee and on the subcommittee which has redrafted Part III.

The Safety and Security Section of the Army Ordnance Department has been very active in this field, and because of war conditions the storage of explosives has assumed extraordinary importance. It appears probable, however, that discussion of this part of the code will take considerable time.

In the meantime, the revision of Part III has already been long pending and the tentative status should be cleared up. Consequently, it is planned to omit the section on powder and explosives at the present time and take a final vote of the sectional committee on the earlier proposal. A further revision to include powder and explosives can then be taken up immediately, and representatives of the organizations interested in explosives can be added to the sectional committee.—*American Institute of Electrical Engineers; National Bureau of Standards.*

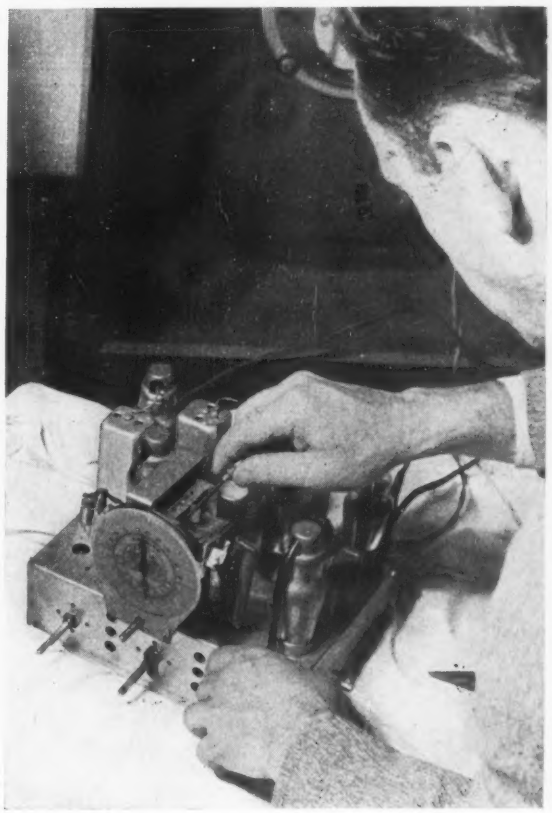
Rotation, Connections, and Terminal Markings for Electrical Apparatus (C6)—

A revision of the 1936 edition of this standard has just been approved by the American Standards Association.—*National Electrical Manufacturers Association.*

Insulated Wires and Cables (C8)—

In general, the standards prepared by this committee have been found to meet the conditions of war as well as those of peace. Such calls for revision as have been made have been limited for the most part to suggestions for limiting the number of sizes of cable manufactured for general use.

Recent WPB orders to the textile industry have limited the number of threads per inch in cloth available for the manufacture of varnished cloth insulation used in certain types of wire and cable. Technical Committee 7 has made a study of the influence of this order on cable manufactured under American



War standards prepared by ASA committee provide replacement parts for civilian radios.

Officers of the Electrical Standards Committee, the central coordinating committee for the electrical work of the American Standards Association, were re-elected this year as follows:

Charles Rufus Harte, The Connecticut Company, *Chairman.*

Sidney Withington, New York, New Haven and Hartford Railroad, *Vice-Chairman.*

J. W. McNair, American Standards Association, *Secretary.*

Standard Specifications for Varnished Cloth Insulation for Lead-Covered or Braid-Covered Power Cable (C8.13-1942), and has reported that as yet insufficient data are available to provide a thoroughly acceptable basis for revising or temporarily modifying the standard.

The sectional committee arranged to have strong representation made to a committee of WPB which had proposed certain schedules of conductor size in stranding for the limitation of manufacture. It appeared to the Executive Committee of the sectional committee that these proposals were ill advised and that they would lead both to an increase in the use of copper and to further complication in manufacturing operations. The committee has been advised informally that this proposal has been dropped.

A member of the Executive Committee has represented the sectional committee at several meetings of the Special Committee on Wire and Sheet Metal Gages of Sectional Committee B32. This special committee has been considering a major change in wire gaging systems. The Executive Committee of sectional committee C8 believes that the American Wire Gage and the circular mil sizes of stranded conductors as used for electric power cables represent the results of extended study and constitute a sound system. To disturb them would cause confusion in the industry over a period of many years.—*W. F. Davidson, Chairman; C. S. Gordon, Secretary.*

Radio (C16)—

The Sectional Committee on Radio has been inactive for the last year and will doubtless continue so until conditions change. The formation of the War Committee on Radio (C75) has absorbed substantially all of the energy and technical manpower which is available for specification or standardization work, and has made it impracticable for the sectional committee to carry on its functions. In addition, the radio industry itself has been entirely devoted to war work and, in consequence, has had no engineering manpower available for standardization work and has dealt with equipment which could not be described or standardized at this time.—*Institute of Radio Engineers.*

Industrial Control Apparatus (C19)—

A revision of the standard originally approved in 1928 has just been completed.—*American Institute of Electrical Engineers; National Electrical Manufacturers Association.*

Insulators for Electric Power Lines (C29)—

A meeting of the committee was held June 30 to consider answers received from members of the committee on a questionaire on approval of a proposed revision of the Standard on Insulator Tests. During the meeting, thermal shock testing of porcelain and lime glass line insulators was discussed. At the close of the meeting there was still a complete lack of unanimity on the scope and application of thermal shock testing, and it was decided to submit a second letter ballot to the entire committee. The results of this ballot were such that there was little likelihood that this standard could be approved as an American Standard. No decision has been reached as to further steps to be taken to reach agreement on thermal shock testing of line insulators.

The chairman of the AIEE Standards Committee has requested that the ESC Committee on Scope be requested to delete the standardization of roof, floor, and wall bushings and tubes from the scope of the project on Insulators for Electric Power Lines (C29) and include such standardization under the project on Apparatus Bushings (C76). This question is being voted upon by the entire C29 committee.—*J. M. Brundige, Chairman; R. M. Havourd, Acting Secretary.*

Mercury-Arc Rectifiers (C34)—

A new chairman, Dr. C. H. Willis of Princeton University, has been appointed, and a complete reorganization of this committee is under way.—*American Institute of Electrical Engineers.*

Railway Motors and Other Rotating Electrical Machinery on Rail Cars and Locomotives (C35-1943)—

A revision of the American Standard C35-1936 was approved in January 1943.—*American Institute of Electrical Engineers.*

Power Switchgear (C37)—

The subcommittee on power circuit breakers is revising the proposed American Standard for a-c power circuit breakers (C37.4/9). It is expected that a vote on the proposed revision will be taken soon in the sectional committee.

Work on several standards has been deferred awaiting the outcome of AIEE committee work. These include High-Voltage Fuses and Current-Limiting Resistors; Switchgear Assemblies; Metal Enclosed Switchgear; and Automatic Stations. It is understood that work is actively in progress on this last standard.

Certain proposed standards which had been considered by the committee are now inactive, and activity on them at this time would be premature. These are Air Switches; Large Air Circuit Breakers; Power Connectors; and Network Protectors. —*H. R. Summerhayes, Chairman; G. S. Lunge, Secretary.*

Definitions of Electrical Terms (C42)—

This committee has been inactive during the past year, and a complete reorganization will be necessary before activity can be resumed. This will be undertaken when conditions warrant appointment of the large number of men who will be needed in the committee work.

Approximately 16,000 copies of the present American Standard have been distributed.—*American Institute of Electrical Engineers.*

Rotating Electrical Machinery (C50)—

Revision of the American Standard for Rotating Electrical Machinery was completed in 1943 and is now in use by industry. The committee is at present inactive, but stands ready to consider any question of interpretation or other questions which may arise. It will also consider comments which are now being received preparatory to the next revision.—*L. F. Adams, Chairman; E. B. Paxton, Secretary.*

Electric Welding Apparatus (C52)—

Two subcommittees have been appointed to revise the Standards for Electric Arc Welding Apparatus and Standards for Resistance Welding Apparatus originally issued in 1933. The subcommittee on Electric Arc Welding Apparatus agreed in 1942 that it would be desirable to defer revision of these standards until after the war. The subcommittee on Resistance Welding Apparatus reports that a tentative standard covering all resistance welding apparatus was prepared under the auspices of the War Production Board, and that this will form a nucleus about which the subcommittee will prepare an American War Standard during the coming year.—*American Welding Society.*

Transformers (C57)—

The Transformer Subcommittee of the American Institute of Electrical Engineers has had one meeting devoted entirely to bringing its technical information up-to-date and expects to complete its work within the next few months.

Section 4 on Instrument Transformers of the American Standard is being revised by the Instrument Transformer Subcommittee of sectional committee C57. As soon as this work is completed and the recommendations for technical changes are received from the American Institute of Electrical Engineers, it should not take long for the committee to prepare the annual addendum which it is planning to issue on changes in the American Standards for Transformers, Regulators, and Reactors

(C57.1-1942; C57.2-1942; and C57.3-1942).—*V. M. Montsinger, Chairman; E. B. Paxton, Secretary.*

Electrical Insulating Materials (C59)—

The following ASTM standards were approved as American Standard during the year:

Standard Methods of Testing

Sheet and Plate Materials Used in Electrical Insulation (ASTM D 229-42; ASA C59.13-1943)

Laminated Tubes Used in Electrical Insulation (ASTM D348-42; ASA C59.14-1943)

Laminated Round Rods Used in Electrical Insulation (ASTM D 349-42; ASA C59.15-1943)

Tentative Methods of Testing

Molded Materials Used for Electrical Insulation (ASTM D 48-42 T; ASA C59.1-1943)

Impact Resistance of Plastics and Electrical Insulating Materials (ASTM D 256-41 T; ASA C59.11-1943)

Revisions of C59.13-1943 (ASTM D 229-42) and C59.1-1943 (ASTM D 48-42T) are now again before ASA for approval.

The following ASTM and NEMA standards have been referred to the ASA for approval:

NEMA Laminated Phenolic Products Standards

NEMA Practice for Machining and Punching of Laminated Phenolic Plate

ASTM Methods of Testing Shellac Used for Electrical Installation (D 411-42)

Submittal of NEMA Manufactured Mica Standards to the American Standards Association has been deferred until the supply of mica meeting the specifications is more plentiful.

The sectional committee is now voting on the proposed submittal of the following revised methods to the ASA:

Methods of Testing Electrical Insulating Oils (ASTM D 117-43)

Tentative Methods of Test for Impact Resistance of Plastics and Electrical Insulating Materials (ASTM D 256-43 T)

The U. S. National Committee of the International Electrotechnical Commission works in close contact with the ASA Electrical Standards Committee. With the addition of representatives of the American Society of Mechanical Engineers and individual technical experts, the membership of the U. S. National Committee is the same as that of the Electrical Standards Committee. Although international work has been at a minimum during the past year, the USNC held its regular annual meeting December 3, and considered several questions of international cooperation. The committee voted to cooperate in development of a Model Safety Code for the Electrical Industry proposed by the International Labour Office. It also considered problems in connection with the proposed organization of the United Nations Standards Committee.

Officers of the USNC were re-elected for the coming year. They are:

E. C. Crittenden, National Bureau of Standards, *President.*

L. F. Adams, National Electrical Manufacturers Association, *Vice-President.*

H. S. Osborne, Member at Large, *Vice-President and Treasurer.*

Rotating electrical machinery for locomotives is covered in a revised standard just approved

Work on the List of Available Standards in the Electrical Insulating Field and on the proposed Handbook on Electrical Insulating Materials authorized last year is to be held in abeyance for the duration.

A tentative table of the properties which might need to be measured on synthetic materials applicable in the field of electrical insulating materials, such as nylon, cellulose acetate, fiberglas, pliofilm, duprene, neoprene, vinyon, etc, has been set up. There is a lack of certain test methods for these materials, such as resistance to corrosion and abrasion and evaluation of mildew-proofing agents. Since any synthetic or new materials of any real value are confidential, however, consideration of such tests is being postponed.—*American Society for Testing Materials.*

Lightning Arresters (C62)—

The committee is now balloting on approval of a revised standard to clear up disagreement between manufacturers and the power group.—*American Institute of Electrical Engineers.*

Carbon, Graphite and Metal Graphite Brushes (C64)—

A committee is now being organized to handle a revision of the American Standard.—*National Electrical Manufacturers Association.*

Preferred Voltages, 100 Volts and Under (C67)—

A meeting of this committee was held November 4. Very satisfactory progress was made, and the committee hopes to submit a final report during the coming year.—*C. A. Powel, Chairman; C. M. Cogan, Secretary.*

Sphere Gap Standardization (C68)—

Since a revision of AIEE Standard No. 4, Measurement of Test Voltages in Dielectric Tests, was approved by the ASA last year, the problem of measurement of test voltages is probably taken care of for a while at least. The next revision will undoubtedly not take place until after the war, at which time a comparison can be made with the sphere-gap values of other countries with a view to establishing uniform international calibration curves.

Electrical Standards Approved in 1943

The following standards recommended by the Electrical Standards Committee were approved by the American Standards Association in 1943:

Apparatus Bushings (AIEE 21-1941) American Standard C76.1-1943

Electrical Insulating Materials, Methods of Testing
Impact Resistance of Plastics and Electrical Insulating Materials (ASTM D256-41T) American Standard C59.11-1943

Laminated Tubes Used in Electrical Insulation (ASTM D 349-42) American Standard C59.15-1943

Molded Materials Used in Electrical Insulation (ASTM D48-42T) American Standard C59.1-1943

Sheet and Plate Materials Used in Electrical Insulation (ASTM D 229-42) American Standard C59.13-1943

Graphical Electrical Symbols for Architectural Plans American Standard Z32.9-1943

Graphical Symbols for Power, Control and Measurement American Standard Z32.3-1943

Letter Symbols for Heat and Thermodynamics including Heat Flow American Standard Z10.4-1943

Rotating Electrical Machinery American Standard C50-1943

Rotating Electrical Machinery on Railway Locomotives and Rail Cars and Trolleys, Gasoline-Electric and Oil-Electric Coaches American Standard C35-1943

Wet Tests AIEE 29-1941 American Standard C77.1-1943

The question of "front-of-wave testing" of power station apparatus and transmission line insulation has created the problem of voltage measurements and wave recording of impulses of the order of two microseconds duration and less. The NEMA-EEI Subcommittee on Correlation of Laboratory Data had this task as one of its last assignments. The completion of this will have to await a decrease in the pressure of the war effort on the several laboratories involved, and their staffs. The results of this work can probably be considered for inclusion in the next revision of the standard.

The members of the subcommittee are now being circularized for suggestions on work to be done by the group during the coming year, or in the future.—*American Institute of Electrical Engineers.*

Domestic Electric Flatirons (C70)—

The manufacture of domestic electric flatirons has been stopped by government order since April, 1942, and there is no present indication as to when it will be resumed. The manufacturers feel that the completion of this standard may well proceed slowly until reconversion of the industry to the manufacture of civilian products is in sight, and those who are most capable of developing a new standard are again working on appliance assignments.—*National Electrical Manufacturers Association.*

Household Electric Ranges (C71)—
Electric Water Heaters (C72)—

Progress is being made on the drafting of these standards.—*National Electrical Manufacturers Association.*

Wood Poles (O5)—

There has been no change in the status of this project during the past year. Standards already approved by the American Standards Association have been used by the War Production Board in its order RMPR-284.—*ASA Telephone Group.*

Letter Symbols and Abbreviations for Science and Engineering (Z10)—

During this past year, the American Standard Letter Symbols for Heat and Thermodynamics was approved and published. Active work is now going forward on Symbols for Electrical Quantities and on Symbols for Radio.

During the past year the Symbols for Structural Analysis have been circulated for criticism, and a report is expected soon.—*American Association for the Advancement of Science; American Institute of Electrical Engineers; American Society of Civil Engineers; American Society of Mechanical Engineers; Society for the Promotion of Engineering Education.*

Graphical Symbols and Abbreviations for Use on Drawings (Z32)—

This committee is actively at work, having completed three standards during the past year. All three have been approved as American Standards. They are: American Standard Graphical Symbols for Power, Control, and Measurement (Z32.3-1943); Symbols for Telephone, Telegraph, and Radio Use (Z32.5-1943); and Graphical Electrical Symbols for Architectural Plans (Z32.9-1943). The committee is now engaged in eliminating a few conflicts which exist between these standards.—*American Institute of Electrical Engineers; American Society of Mechanical Engineers.*

War Projects Under the Electrical Standards Committee

Replacement Parts for Civilian Radio (C16)—

The following four standards were approved under this project:

Fixed Paper-Dielectric Capacitors (Home Receiver Replacement Type) C16.6-1943

Dry Electrolytic Capacitors (Home Receiver Replacement Type) C16.7-1943 A revision of this was made during the year.

Simplified List of Home Radio Replacement Parts (Paper and Electrolytic Capacitors, Volume Controls, Power and Audio Transformers and Reactors) C16.8-1943

Power and Audio Transformers and Reactors (Home Receiver Replacement Type) C16.9-1943

The Committee is still at work on a standard for volume control.

Electrical Indicating Instruments (C39)—

The following standards were approved during the year:

Electrical Indicating Instruments (2½- and 3½-Inch, Round, Flush-Mounting, Panel-Type) C39.2-1943

Shock-Testing Mechanism for Electrical Indicating Instruments (2½- and 3½-Inch, Round, Flush-Mounting, Panel-Type) C39.3-1943

Dimensions for External Radio-Frequency Thermocouple Converters (120 Milliamperes to 10 Amperes, Inclusive) C39.4-1943

The committee has in approximately final form a war standard for shunts for panel instruments.

War Committee on Specifications for Design and Construction of Resistance Welding Equipment (C52)—

A war committee, recently authorized, is now considering comments received on the first specification, Electrodes (C52.1).

Machine Tool Electrical Standards (C74)—

A ballot of the war committee on a proposed revision of the war standard approved in 1942 is almost complete.

Radio for the Armed Forces (C75)—See page 2.

Brazil's Standards Association Holds Fifth Reunion

by A. O. Silva[1]
U. S. Testing Company, Inc.

IN recent years, standardization in Brazil has been gradually moving ahead. As the fifth reunion of the ABNT (Associação Brasileira de Normas Técnicas), held last September, many new standards were adopted and preliminary work on others was started.

Brazil's entry into the war and its desire to overcome many shortages in materials and manufactured products has helped spur on this standardization movement. A strong effort is being made to put into production the great natural resources of the country and much progress has already been made in the mineral and agricultural fields. Factories have sprung up and industry is rapidly growing.

The fifth reunion meeting of ABNT was held in two sessions—the first in the City of São Paulo during the week of September 12 to 18; and the second in Porto Alegre during the following week.

The São Paulo meetings were presided over by Dr. Ary Torres, president of the Association. At the opening meeting, Minister Joao Alberto, Brazil's Coordinator of Economic Mobilization, presented an address on the importance of standardization.

Dr. Paulo Sá, secretary of the ABNT, was the presiding officer at the Porto Alegre session.

Following are some of the standards adopted by the ABNT during its meeting[2]:

Approved Standards

Specifications for incandescent electric lamps for general illumination
Specifications for raw linseed oil
Method of testing raw linseed oil
Standard for calculating loads in the design of buildings
Standard for determining the composition and for manufacturing mixed slabs, such as terrazo, etc
Standard for the moving load of railroad bridges
Specifications for plain concrete pipe (circular cross section)
Method for testing absorption in plain concrete pipe (circular cross section)

Recommended Standards

Standard for the building of wooden parquet floors
Specifications for the wooden blocks for parquet flooring
Methods of testing manganese minerals
Standards for the design and erection of wooden structures
Specifications for roof tiles and bricks

[1] Mr. Silva represented the American Standards Association in São Paulo until his return to the United States this month.

[2] These standards are published in the Portuguese language, and copies are not yet available in the ASA Library.

A main street in São Paulo, Brazil, where ABNT held some sessions of its Fifth Reunion

Recommended Standards—(Continued)

Specifications for raw materials of the rubber industry (crude rubber)
Methods of testing bricks and roof tiles
Method of testing titanium minerals
Method of testing quality of aggregates
Standards for electrical material: (*a*) Wire and cable; (*b*) storage batteries; (*c*) insulators
Standards for paper
Standards for coffee, tea, cocoa, matte, guarana
Standards for vegetable oils
Methods of testing soils
Standards for technical drawing
Methods for testing petroleum
Standards for coal: (*a*) Method of test for determining calorific value of coal

Emergency Standards

Specifications for centrifugal cast-iron pipes
Methods of testing centrifugal cast-iron pipes

Preliminary Discussions

Preliminary discussions were held at the meetings on the following:

Standards for lumber: (*a*) Nomenclature of lumber in current use; (*b*) Tests for structural pieces
Technical terminology
Method of testing bricks to be used in the making of mixed slabs, such as terrazo, etc
Method of testing contraction of soils
Standards for fabrics

Amendments Approved

Modification of the Brazilian standard for the design and erection of reinforced concrete bridges
Modification of the Brazilian standard for the design and erection of structures of reinforced concrete

During the reunion, tours of many factories and industries were conducted for the members attending the meetings.

(Continued on next page)

At the present time industry in Brazil is showing a great deal of enthusiasm for standardization, and, looking through the ABNT membership lists, we find several American firms. The fifth reunion meetings were attended by the American Standards Association's representative in Brazil, M. E. Souza of the General Electric Company, who was assisted in São Paulo by A. O. Silva, representative of the United States Testing Company, Inc.

It is the opinion in Brazil that we in the United States can be of assistance to our Brazilian neighbors by supplying Portuguese translations of American Standards and of any other papers that may be of help to them in formulating their standards.

ASA Calls Conference To Coordinate Graphical Symbols

COORDINATION of graphical symbols used in electrical engineering to be completed before the end of March is the goal set for a new American War Standards project, just authorized by the American Standards Association. The project was requested because of conflicts between the electrical graphical symbols approved by the National Aircraft Standards Committee in its standard NAS 71 and those approved by the American Standards Association in the American Standard Graphical Symbols for Power Control and Measurement (Z32.3-1943) and the American Standard Graphical Symbols for Telephone and Telegraph Use (Z32.5-1942). Such conflicts have caused the electrical manufacturing industry considerable trouble, H. W. Samson, General Electric Company and chairman of ASA Sectional Committee on Graphical Symbols (Z32), declared in requesting the War project.

Because of the difficulties experienced by the industry, Mr. Samson last year made a comparison showing the differences between the graphical symbols in NAS 71 and the American Standard graphical symbols. This comparison was submitted through the ASA to the National Aircraft Standards Committee, and a meeting was held in New York on November 16 to discuss the problem.

Quick Action Recommended

An even more comprehensive comparison of conflicting symbols was presented at the meeting by W. L. Berry of the Hughes Aircraft Company, who is chairman of the Committee on Wiring Diagrams, Design Practices, and Nomenclature of the National Aircraft Standards Committee. This comparison included also symbols used by the International Electrotechnical Commission, the British telephone and telegraph group, the General Electric Company, and the Army Air Force. The meeting agreed that there is a definite need for coordination of graphical symbols, particularly in the aeronautical and industrial electronics fields, and unanimously recommended the initiation of a project under the War Standards Procedure of the ASA to coordinate graphical electrical symbols in the shortest possible time. The committee submitted a proposed War Standard as a step in expediting the completion of the work.

"The need for a coordinated standard is a constantly growing one and it is important that some action be taken in the very near future particularly in view of the fact that the Army and Navy Aeronautical Board has planned to issue an AN Standard similar to NAS 71," the request for the project declared. "It appears reasonable," it continued, "to believe that a coordinated standard can be developed within a period of 90 days."

A conference of the groups concerned has been called for January 22 to consider the proposed standard, and a steering committee is being named to include those present at the preliminary meeting. Members of this group include: W. V. Boughton, Douglas Aircraft Company, chairman of the NASC Subcommittee on Electrical Equipment, Radio, and Installation; W. L. Berry, Hughes Aircraft Company, chairman of the NASC Committee on Wiring Diagrams, Design Practices, and Nomenclature; R. S. Burnap, RCA Manufacturing Company; W. J. Fleming, General Electric Company, and chairman of the Subgroup on Control Symbols of ASA Sectional Committee Z32; W. L. Heard, Bell Telephone Laboratories, secretary and chairman of the subgroups on Communication and Electronic Symbols of ASA Committee Z32; H. W. Samson, General Electric Company and chairman of ASA Committee Z32; and Thomas Spooner, Westinghouse Electric and Manufacturing Company.

ASA Approves Standards For Apparatus Bushings

The American Standards Association has approved as an American Standard the Standards for Apparatus Bushings and Test Code for Apparatus Bushings (C76.1-1943) submitted by the American Institute of Electrical Engineers.

The Standards for Apparatus Bushings cover outdoor bushings for large apparatus, type bushings for small apparatus, and indoor bushings for all types of apparatus except dry-type instrument transformers, air-blast transformers, dry-type regulators, and circuit breakers rated below 5,000 volts, and non-oiltight oil circuit breakers rated 50,000 kva or less.

Requirements for service conditions, definitions, ratings, heating, dielectric tests, and name-plate markings are included, as well as a table of standard withstand test voltages. The standards are not intended to apply to wall bushings, cable potheads, or insulators for back-connected disconnecting switches, although many of the principles may be applicable.

The test code for apparatus bushings provides tests for the bushings apart from the tests for the assembled apparatus. There is a classification of bushings tests, test procedure, adjustment of conditions for wet test, standard test conditions, correction factors, routine and design tests.

The standard may be obtained from the American Standards Association at 40 cents per copy.

Standards Issued by Associations and Government

(See "ASA Standards Activities", page 22, for new American Standards and progress on ASA projects)

For the information of ASA Members, the American Standards Association gives here a list of the standards received during the past month by the ASA Library for its classified files. With the increasing amount of material being received it has been decided to eliminate from the monthly list a few of those standards which may not be so important to ASA Members, such as Federal Specifications for foods. The list below, therefore, includes only those standards which the American Standards Association believes will be of greatest interest to Members in connection with their war production.

The standards listed may be consulted by ASA Members at the ASA Library, or copies may be obtained from the organization issuing the standard. Addresses of these organizations are given for your convenience.

Associations and Technical Societies

American Society for Testing Materials (260 South Broad Street, Philadelphia 2, Pa.)

The letter T following a designation indicates the standard is Tentative. Where an additional number appears within parentheses, it indicates there is an Emergency Alternate Provision attached to the standard.

Copper and Copper-Alloy Seamless Condenser Tubes and Ferrule Stock B111-43 (EA-B111) 25¢
Cartridge Brass Cartridge Case Cups B129-43T (EA-B129) 25¢
Gilding Metal Sheet and Strip B130-43T (EA-B130) 25¢
Gilding Metal Bullet Jacket Cups B131-43T (EA-B131) 25¢
Leaded Red Brass (Hardware Bronze) Rods, Bars, and Shapes B140-43 25¢
Identification of Fibers in Textiles D276-43T 25¢
Rubber and Synthetic Rubber Compounds for Automotive and Aeronautical Applications D735-43T 25¢
Electrodeposited Coatings of Lead on Steel ES-31 25¢
Paper and Paper Products: Compilation of Standards on November, 1943 $1.35

U. S. Government

(Wherever a price is indicated, the publication may be secured from the Superintendent of Documents, Government Printing Office, Washington, D. C. In other cases, copies may be obtained from the government agency concerned.)

National Bureau of Standards (Washington, D. C.)

Earthenware (Vitreous-Glazed) Plumbing Fixtures Commercial Standard CS111-43 October 15, 1943 5¢
Homogeneous Fiber Wallboard Commercial Standard CS112-43 October 25, 1943 5¢

Federal Specifications Executive Committee (U. S. Treasury Department, Washington, D. C.)

Federal Specifications

(Copies available from Superintendent of Documents, Government Printing Office, Washington, D. C.)

Ammonia, Anhydrous (Compressed) O-A-445 November 15, 1943
Ammonium-Chloride (Sal Ammoniac) (amendment 4) (superseding amendment 3, 5/22/43) O-A-491 January 15, 1944
Brushes:
- Calcimine (amendment 2) (superseding amendment 1, and E-H-B-141, 9/5/42) H-B-141 January 15, 1944
- Flowing, Skunk-Hair (amendment 4) (superseding amendment 3 and E-H-B-256, 9/19/42) H-B-256 January 15, 1944
- Varnish, Flat (Double X Thickness) (amendment 2) (superseding amendment 1 and E-H-B-701, 9/9/42) H-B-701 January 15, 1944
- Varnish, Flat (Triple X Thickness) (amendment 1) (superseding E-H-B-706, 8/25/42) H-B-706 January 15, 1944
- Varnish, Oval (amendment 1) (superseding E-H-B-711, 9/5/42) H-B-711 January 15, 1944

Federal Specifications—(Continued)

Asphalt:
- (for) Built-Up Roofing, Waterproofing, and Damp-Proofing (amendment 1) SS-A-666 January 15, 1944
- (for use in) Road and Pavement Construction (superseding SS-A-706a) SS-A-706B January 15, 1944

Blasting-Apparatus (Machines, Blasting; Galvanometers and Rheostats for Testing Blasting Circuits and Machines) (amendment 1) (superseding E-W-B-411, 9/5/42) W-B-411 January 15, 1944
Castings:
- Bronze; (amendment 3) QQ-B-691a November 15, 1943
- Bronze, Manganese; (Including Manganese-Aluminum Bronze) (superseding QQ-B-726b) QQ-B-726c January 15, 1944

Feedstuffs; Concentrated (superseding N-F-211) N-F-211a November 15, 1943
Felt; Coal-Tar-Saturated (for) Roofing and Waterproofing (amendment 1) (superseding E-HH-F-201, 4/1/42) HH-F-201 November 15, 1943
Hammers; Electric, Portable OO-H-103 December 1, 1943
Irons, Soldering; Electric (superseding W-I-681) W-I-681a December 1, 1943
Laundry Appliances and Wool-Pressers (Tailor Shop) (amendment 1) (superseding E-OO-L-131b, 3/6/43) OO-L-131c December 1, 1943
Leather:
- Strap, Black or Russet (amendment 1) KK-L-271a December 15, 1943
- Upholstery (superseding KK-L-291) KK-L-291a November 15, 1943

Lubrication:
- Graphite, Flake SS-G-659 January 1, 1944
- Oil, Machine VV-O-526 January 15, 1944

Federal Specifications—(Continued)

Machines:
- Numbering; Automatic, Hand-Operated (amendment 2) (superseding amendment 1 and E-GG-M-61, 1/24/42) GG-M-61 December 1, 1943
- Numbering; Lever-type (amendment 1) (superseding E-GG-M-71, 1/24/42) GG-M-71 December 1, 1943
- Punches; Paper, One-Hole (With and Without Eyelet Device) (amendment 1) (superseding E-GGG-P-846, 1/28/42) GGG-P-846 November 15, 1943

Mortar; Air-Setting, Refractory, Bonding (Wet and Dry Types) (superseding HH-M-611) HH-M-611a January 1, 1944

Motor-Fuel VV-M-567 January 15, 1944

Paper:
- Bond White, and Colored (amendment 3) UU-P-121c November 15, 1943
- Boxes; Powder, Pharmaceutical UU-B-666 January 15, 1944
- Cards, Index (amendment 2) UU-C-128 November 15, 1943
- Computing Machine (superseding UU-P-185, 3/3/36 and E-UU-P-185, 7/30/43) UU-P-185a December 15, 1943
- Index (amendment 2) UU-P-258a November 15, 1943
- Ledger (amendment 6) UU-P-288 November 15, 1943
- Legal-Cap, Ruled (amendment 3) UU-P-301 November 15, 1943
- Manifold (amendment 7) UU-P-328a November 15, 1943 388a, 9/8/43) UU-P-388b December 15, 1943
- Mimeograph (superseding UU-P-388a, 9/30/38 and E-UU-P-
- Printing, Book, Machine-Finish (amendment 5) UU-P-465 November 15, 1943
- Sacks; Shipping UU-S-48 January 1, 1944
- Sheathing, Waterproof (amendment 1) UU-P-536 December 15, 1943
- Tags; Shipping and Stock (amendment 2) UU-T-81b November 15, 1943
- Towels (amendment 4) (superseding amendment 3 and E-UU-T-591, 8/25/42) UU-T-591 January 15, 1944
- Writing (amendment 6) UU-P-641 November 15, 1943

Paints and Varnishes:
- Enamel; Heat-Resisting (400 F) Black (amendment 1) superseding E-TT-E-496, 4/30/42) TT-E-496 November 15, 1943
- Enamel; Interior, Gloss, Light-Tints and White (amendment 1) (superseding E-TT-E-506a, 5/25/42) TT-E-506a November 15, 1943
- Enamel; Pigmented (Air-Drying and Baking) Black (amendment 3) (superseding amendment 2 and E-TT-E-521, 4/25/42) TT-E-521 November 15, 1943
- Enamel; Water-resisting, Red (amendment 3) (superseding amendment 2 and E-TT-E-531a, 2/24/42) TT-E-531a November 15, 1943
- Oil, Interior, Eggshell-Flat-Finish, Ready-Mixed and Semipaste, Light-Tints and White (amendment 1) (superseding E-TT-P-51a, 4/25/42) TT-P-51a November 15, 1943
- Ready-Mixed and Semipaste, Exterior, Chrome-Green (amendment 1) (superseding E-TT-P-71a, 2/24/42) TT-P-71a December 1, 1943
- Remover; Paint and Varnish (Organic-Solvent-Type) (amendment 1) (superseding E-TT-R-251a, 12/21/42) TT-R-251a November 15, 1943
- Resin-Emulsion, Interior, Paste, Light-Tints and White (amendment 1) (superseding E-TT-P-88, 4/25/42) TT-P-88 December 1, 1943
- Thinner; Lacquer (amendment 1) (superseding E-TT-T-266, 12/21/42) TT-T-266 November 15, 1943
- Varnish; Interior (amendment 2) (superseding amendment 1, and E-TT-V-71a, 9/30/41) TT-V-71a November 15, 1943
- Varnish; Mixing (for) Aluminum Paint (amendment 2) (superseding amendment 1 and E-TT-V-81a, 9/30/41) TT-V-81a November 15, 1943

Pins; Cotter, Split (superseding FF-P-386, and E-FF-P-386, 2/24/42) FF-P-386a December 1, 1943

Polish; Metal (amendment 2) PP-556a November 15, 1943

Pullers; Fuse W-P-796 January 15, 1944

Scales, Weighing; General Specifications (superseding AAA-S-121a) AAA-S-121b November 1, 1943

Steel, Corrosion-Resisting, Plates, Sheets, Strips, and Structural Shapes (superseding QQ-S-766) QQ-S-766a November 15, 1943

Textiles:
- Gauze; Plain (superseding CCC-G-101a and E-CCC-G-101a, 7/5/43) CCC-G-101b January 15, 1944
- Bandages; Gauze, Compressed (amendment 1) (superseding E-DDD-B-51, 7/5/43) DDD-B-51a January 15, 1944
- Sheets; Cotton, Bleached (amendment 1) (superseding DDD-S-281) DDD-S-281a November 15, 1943

Tubes; Diagnostic, Ear (Toynbee) GG-T-746 November 15, 1943

Wire; Phosphor-Bronze, Spring (amendment 4) QQ-W-401 November 15, 1943

Army Air Force
(Washington, D. C.)

Material and Process Specifications (superseding issue of November 10, 1943) December 10, 1943

Are Immunization Illnesses "Lost-Time Injuries"?

Shall time lost through illness when workers are required to take immunization treatments against typhoid fever and smallpox or anti-tetanus and Pasteur treatments following injuries be included in industrial injury records? This is the question which the United States Employees' Compensation Commission and the Tennessee Valley Authority with opposing points of view have both presented to the ASA Sectional Committee on Methods of Recording and Compiling Accident Statistics.

The question had been reviewed by the committee in 1939 at the request of the Tennessee Valley Authority and it was voted that lost time due to such causes should not be included in basic industrial injury rates. This has resulted in eliminating such illnesses from the records of lost-time injuries compiled by organizations which use the American Standard methods. The United States Employees' Commission, which is one of the organizations using the standards, reports that it handles more than 50,000 injuries a month and that it compensates those arising out of compulsory immunization against disease. It believes, therefore, that they should be chargeable as lost-time injuries.

Unfair to Include Illnesses?

On the other hand, it has been argued that it is unfair to include such illnesses when an employer as a health measure undertakes to provide his employees with immunization service and makes such a program effective by requiring immunization as a condition of employment. In one case, experience over a period of years indicates that the inclusion of immunization illnesses in industrial injury rates would increase the accident frequency rate from 15 to 25 percent. Thus, when these illnesses are included, the rates do not provide an accurate measure of the degree of industrial safety attained by the organization.

The question is being circulated to the Safety Code Correlating Committee for further consideration.

Standards Help Solve Laboratory Problems

Unprecedented demands of war effort emphasize importance of standards in production as well as standard laboratory tests in control of quality.

by Joseph J. Wocasek

Associate Chemist,
Engineering Division, Jeffersonville, Quartermaster Depot

THE war has provided industry with one more reason for turning out a superior product, namely the opportunity to aid America and its Allies in a titanic struggle for existence. But this opportunity is realized only when production is coupled with speed, and speed has usually meant a sacrifice of quality. Moreover the ever-broadening struggle to maintain schedules long ago exhausted the supply of skilled employees so that now recruited workers are producing items whose manufacture a few months ago was entirely unknown to them.

The presence of unskilled help, added to the realization that the product must be good, makes industrial standardization a desirable and necessary undertaking. There must be a definite and steadfast way of doing things with frequent supervision to see that no variance occurs. Suggestions for new methods, while encouraged, must be thoroughly investigated before being put into practice for they may affect not only one company's product, but that of several cooperating on a contract.

The real worth of any item is its performance in the field. If industry were cognizant of failures likely to occur in use because of construction or design it could obviate them in manufacture. Unfortunately, service failures frequently do not become known for many months. It has therefore been the aim of industry to anticipate failures by means of accelerated service tests and to eliminate them by establishing standards of a physical and chemical nature which must be met by a product before it is released.

Laboratory Is Bulwark Against Errors

The result of this need for production control is the modern testing laboratory. Equipped with proper tools and staffed by skilled technicians it has become a bulwark against manufacturing errors and a guide to industrial design. With its help results have been attained more quickly, more economically, and more accurately than in the past.

But the laboratory is itself built of tools and devices, more delicate and meaningful than those commonly encountered, nevertheless subject to error. These implements are used and leaned upon for support because of the confidence placed in them; they are regarded as infallible only because it is known wherein they are fallible. Instruments get out of adjustment, wear out, or breakdown simply because they are physical objects. Fortunately almost all of them can be repaired; moreover, the idiosyncrasies of most of them are known and can be rectified by proper control and standardization. The pattern of standardization depends on the type of tool, its resistance to change, its frequency of use, and the accuracy with which it is credited.

Study Needed to Determine Amount of Checking

When an individual technician works alone and is independently responsible for his results, the amount of checking he instigates is purely a matter of his own choosing. It has been found that under this condition the frequency of investigation is much too low and that standardization is undertaken only when results have reached such a state of inaccuracy as to be obviously wrong.

The other extreme would be to evaluate a tool each time it is used. While this practice is often advisable, in most instances it is a wasteful sacrifice of time, since many instruments can be used for long periods without becoming erratic in operation. Some instruments, after preliminary examination by the manufacturer, require no further attention.

The solution of the problem involves an intelligent investigation of each item with due regard for all factors concerned, the formation of a definite policy, the communication of this policy to the technician or worker involved, and the willing cooperation of the worker to make the extra effort so that his results are truly representative.

The standardization of laboratory functionings, which themselves serve as verifying and controlling agents for industrial processes, must be concerned with dimensional, instrumental, chemical, and methodical factors.

No Permanent Standards Before Nineteenth Century

It is difficult to visualize industrial operation without the use of standards, yet prior to the Nineteenth Cen-

NOTE. This article has been approved for technical accuracy by the Engineering Division, Jeffersonville Quartermaster Depot, and by the War Department Bureau of Public Relations.

tury there were no permanent guides for fabrication of materials. True, there were numerous attempts at fixing the values of dimensional units but they were linked with divers and sometimes unattainable objects. For example, the inch was variously recognized as being the width of a thumbnail, the length of three barley corns placed end to end, or the twelfth part of a cubit; the yard as the distance from the nose to the end of the thumb (King Henry's, no less!); while the foot, depending upon conditions, ranged from 9¾ to 19 inches. It was not until 1878 that the present yard was defined by law.

Eli Whitney First Designed Interchangeable Parts

Eli Whitney is credited with being the first to design mass production of interchangeable parts. The increased demand for muskets during the period following 1776 could not be met by the existing methods whereby intricate parts were individually cut to fit. Moreover, failure of any portion in service rendered the article useless until a new part was fashioned to replace the old. Whitney built a gun factory, designed production machinery, and established his own permanent standards of measurement. By strict adherence to these gauge standards, parts of Whitney muskets were interchangeable.

World War I showed how vital permanent standards had become when it was found to be necessary to partition contracts among several companies in order to meet production goals. World War II finds this importance at its zenith, with a half dozen or more organizations cooperating in the manufacture of parts which ultimately become a single item.

The devices used by industry for measuring the size and shape of an object vary from an ordinary plastic rule graduated in inches and large fractions thereof to the cathetometer which can indicate differences of 1/100,000 of an inch. The quality of the measuring device chosen depends upon the accuracy desired. For example, if it is desired to determine the number of inches in length of an object, a wood or plastic rule is sufficient; for measurement in both inches and fractions, a steel rule graduated in 32nds or 64ths is recommended; for further accuracy a vernier caliper indicating 1/128ths of an inch may be desirable; while for very precise measurement a micrometer is employed giving fractional results in 1/1000ths of an inch. For small openings which cannot be measured by a micrometer or caliper, or for irregular objects or items of very small magnitude, as for instance a filament of plastic screening, the cathetometer is an invaluable tool.

Daily Standardization of Micrometers Recommended

Most of the above instruments measure directly, or indicate values by simple movement of one scale upon another, hence standardization is not necessary providing the scales have been shown to be properly marked by the manufacturer. The micrometer, however, does not provide values in this manner but rather indicates the displacement of jaws by a movement of a graduated sleeve on a graduated cylinder. This operates on a screw arrangement, and errors are possible owing to loosening and wearing of parts. Consequently each micrometer is equipped with a standard block of known dimensions and a means of adjusting the micrometer so that its reading will correspond with the true value of the block. This standardization should be performed daily when the micrometer is in constant use.

Instruments Checked with Standards of Known Value

Many other instruments such as the Abbé defractometer, Hunter reflectometer, Hardy spectrophotometer, Magnegage, spectrograph, and calorimeter come equipped with standards of known value with which they can be checked. Others, like the titrimeter, Chemograph, Micromax, and potentiometer are calibrated in part by balancing against a standard cell which is part of the instrument. In most cases this is done manually each time the instrument is used; some, however, are selfbalancing and automatically do so during operation.

With the great majority of instruments, however, standardization is made against some independently chosen substance which itself may have to be prepared. Here the skill and cooperation of the individual technician is called into full play and he himself often must decide whether or not the instrument is acting properly. A formal standardization program busies itself with factors controlling the relative accuracy of an answer as furnished by an instrument, yet frequently no answer at all, or a variant one, may result from such things as a worn-out or weak battery, loose or partial connections, improper preparation, size, or concentration of sample, or even such minor factors as temperature and humidity of the room or proximity to other work.

Hundreds of Chemical Solutions Used

The number of chemical solutions involved in an analytical laboratory runs into the hundreds. Most of them are very specific in use, especially those employed in spot testing and in microanalysis. Their correct formulation becomes of prime importance in a standardization program as well as decisions regarding their stability to hydrolysis and reaction to atmospheric conditions such as sunlight and laboratory fumes.

It is suprising, however, that the standard solutions used in great volume and by the majority of technicians in performing the mass of analysis are but few in number. In brief these are: half and tenth-normal sodium hydroxide and tenth-normal solutions of hydrochloric acid, sodium thiosulfate, potassium thiocyanate, silver nitrate, and potassium permanganate. In addition, standard nitric acid, potassium iodate-iodide, and sodium arsenite find extensive use in metal analysis. Because these solutions are used so often and in so many different determinations it is more desirable to assign their preparation, survelliance, and evaluation of factor to one person rather than to a group of individuals. Ordinarily, a weekly determination of normality should be made.

The normality of a solution may be found in a number of ways. In a few cases a standard solution may be prepared by dissolving an accurately weighed pure substance in a definite volume of solvent to give the desired concentration. In other instances the normality may be found by precipitating and weighing the active ingredient as a stable salt. Most solutions, however, are standardized by determining the exact volume required to react with a known amount of a substance called the primary standard.

The standardization program must specify the prim-

ary standard, method and frequency of checking, and indicators to be used. The choice of primaries has largely been made for us by custom and fortunately most of them are available in a very pure state from the National Bureau of Standards. The value of these materials cannot be over-estimated, and wherever possible they should be employed.

Method Is Important Tool

Probably the most important tool in an analysis is the method used. A few methods are so specific that only general adherence is necessary to secure accurate results. Most procedures, however, especially the newer ones based upon slightly different physico-chemical properties, must be closely followed, otherwise results are unreliable. In this respect we are fortunate to have at our disposal works like the methods of analysis of the American Society for Testing Materials, Association of Official Agricultural Chemists, American Association of Textile Chemists and Colorists, American Leather Chemists Association, and many others which furnish officially accepted procedures in minute detail.

It is always better to perform analyses according to these official methods for not only does this practice lend further credence to results obtained, but it also furnishes a standard method whereby materials may be compared.

New Synthetics Call for New Methods

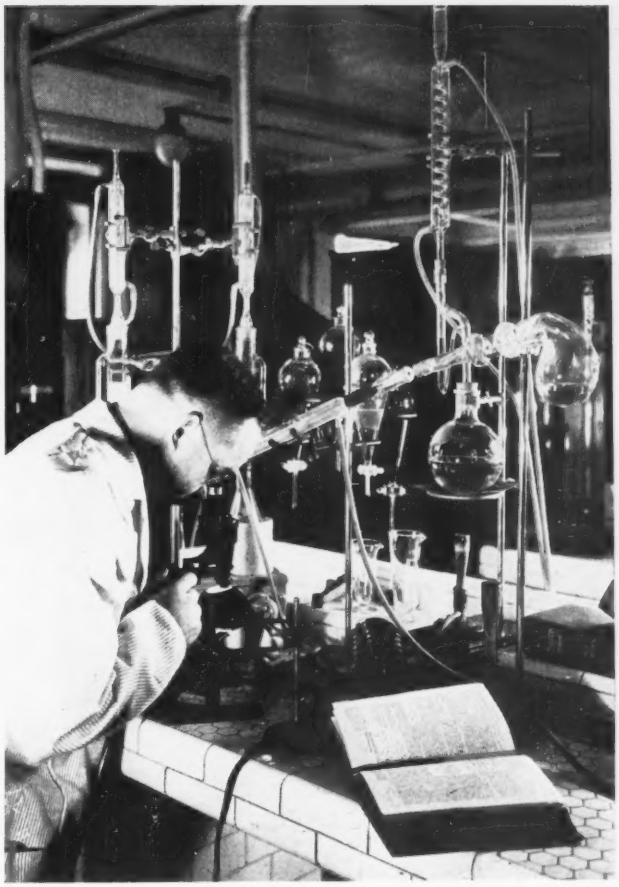
Often, however, as in the case of the newer synthetics, official methods of analysis are not available and test procedures must be improvised. Before they are used in verifying and controlling production, an extensive investigation should be undertaken to determine their accuracy and precision. The former deals with the agreement of results with true or accepted values, while the latter is concerned with the difference in values obtained from two identical samples.

Finally, it should be remembered that individual values ought not to be considered, but rather the over-all picture secured from a complete investigation. Results of physical and chemical tests should go hand in hand in evaluating a sample. Often a physical test will help to estimate a chemical analysis, frequently a chemical test will help solve a seeming paradox in the physical examination. For example, a zinc die-cast exhibited a tensile strength far below expectations; it was found by chemical analysis to contain excessive amounts of lead.

Laboratories Solve Mysteries

Occasionally the staff of a testing laboratory is baffled by results which seem wholly out of conformity with prediction. Some of the most common physical properties frequently afford valuable information and provide clues in solving these mysteries.

For example, a certain laboratory had subjected a series of "zinc die-casts" to a salt spray corrosion test to determine the protection afforded by the enamel coating. Examination of the exposed samples revealed not the expected white zinc products, but unmistakable evidence of iron oxide rust. In attempting to explain this phenomenon all sorts of metallurgical theories were advanced and discarded, until one technician suggested that a magnet be applied to the items. This simple expedient showed the base metal to be steel rather than zinc die-cast; further investigation revealed that the items had been improperly labeled by the sampler. Needless to say, the magnet test became standardized procedure in that laboratory.



"The number of chemical solutions involved in an analytical laboratory runs into the hundreds."

Summary

The unprecedented demands brought about by the war effort have compelled industry to employ great numbers of unskilled workmen in attempting to meet manufacturing goals. Because of this condition and the vital nature of the product, it is necessary to have constant assurance that high quality is maintained. This is secured in a two-fold manner: First, by establishing rigid standards in manufacturing procedures; and second, by continual examination of the raw materials and the finished item in a modern testing laboratory.

Since both of the above criteria are themselves subject to error, they must be firmly governed by a complete and detailed standardization program. This must control and rectify all phases of testing including tools, instruments, materials, and methods.

The number of tests performed on control samples should be sufficient to evaluate it properly. A correlation of data rather than individual results should be employed in determining the acceptability of the item.

Standard Letter Symbols Provided for Gear Engineering

AN American Standard Letter Symbols for Gear Engineering, which it is hoped will establish a uniform practice in mathematical notation for equations and formulas dealing with toothed gearing, has been approved by the American Standards Association. The symbols included in this standard cover those used in connection with design, application, manufacture, inspection, and new methods and problems in this field. The purpose is to facilitate a clear understanding of mathematical work in published articles, papers, and books, and to eliminate possibilities of confusion. It is not intended that these letter symbols be used on working drawings or in manufacturing records.

The standard outlines the general principles of letter symbol standardization, dealing with symbols and subscripts. The technical material is privided in four lists: (1) the allocation of the English alphabet for gear engineering symbols; (2) Greek letters used in the standard; (3) recommended plan for subscripts; and (4) letter symbols for gear engineering, divided into general and special symbols.

The standard was developed under the leadership of the American Society of Mechanical Engineers and the American Gear Manufacturers Association, and should prove helpful to anyone having occasion to work with gear engineering or gear manufacturing.

It was developed by a subcommittee of the ASA committee on the Standardization of Gears headed by D. T. Hamilton of the Fellows Gear Shaper Company. Members of the subcommittee are: Professor Earle Buckingham, Department of Mechanical Engineering, Massachusetts Institute of Technology; N. H. Byam, Chicago Rawhide Manufacturing Company; A. H. Candee, Mechanical Engineer, Gleason Works; Granger Davenport, Assistant Chief Engineer, Gould & Eberhardt, Inc; Professor H. C. Hesse, Department of Mechanical Engineering, University of Virginia; Professor O. A. Leutwiler, Head of the Mechanical Engineering Department, University of Illinois; A. W. Luce, the Fellows Gear Shaper Company; L. D. Martin, Gear Engineer, Camera Works, Eastman Kodak Company; Professor F. A. Mickle, Department of Mechanical Engineering, University of Michigan; and G. P. Stahl, the Stahl Gear & Machine Company.

Standards for Letter Symbols

In addition to the new American Standard, Letter Symbols for Gear Engineering, five other standards providing letter symbols in other engineering fields have been approved and are available. These standards are:

Letter Symbols for Electrical Quantities (Z10g1-1929) 20¢
Letter Symbols for Hydraulics (Z10.2-1942) 35¢
Letter Symbols for Mechanics of Solid Bodies (Z10.3-1942) 25¢
Letter Symbols for Heat and Thermodynamics including Heat Flow (Z10.4-1943) 55¢

The American Standard Letter Symbols for Gear Engineering (B6.5-1943) may be obtained at 25 cents per copy from the American Standards Association.

Toluene Concentration in Air Defined for Workers' Safety

A NEW American Standard, Allowable Concentration of Toluene, approved recently by the American Standards Association, sets safe limits for the amount of toluene permissible in the air of industrial workshops to safeguard the health and efficiency of the workers. Toluene, if present in large concentrations, acts upon the central nervous system as a depressant and causes headache, confusion, and paresthesias. Cases of toluene poisoning have been widespread enough and serious enough to warrant some form of protection for workers, the ASA committee found. Toluene is used as a solvent for paints, rubber, etc.

In addition to setting a safe limit for the presence of toluene—200 parts per million parts of air for exposure not exceeding eight hours—the standard covers the physical, chemical, and toxic properties of the substance. Sampling procedure, and analytical methods are also covered. It also includes a bibliography of general information about toluene.

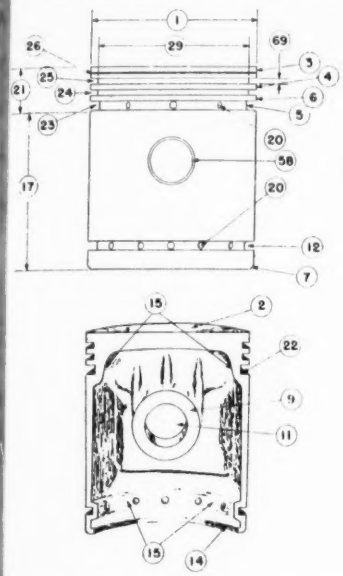
The ASA committee that developed this standard has approved to date twelve standards on toxic dusts and gases (Z37.1-1941 to Z37.12-1943). Standards for oxides of nitrogen, methanol, and styrene monomer will be available shortly. Work is now progressing on the development of standards for formaldehyde, carbon tetrachloride, trichloroethylene, fluorine and fluorides, and hydrofluoric acid.

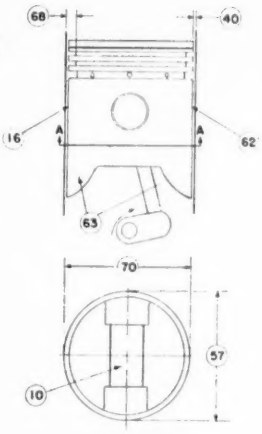
The American Standard Allowable Concentration of Toluene (Z37.12-1943) may be obtained for 20 cents from the American Standards Association, 29 West 39th Street, New York 18, N. Y.

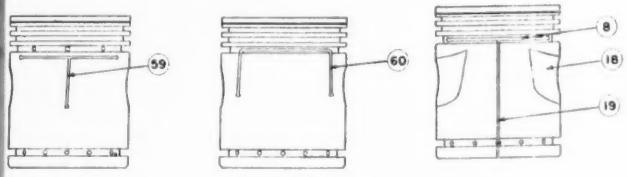
SAE Proposes Standards For Piston Ring Nomenclature

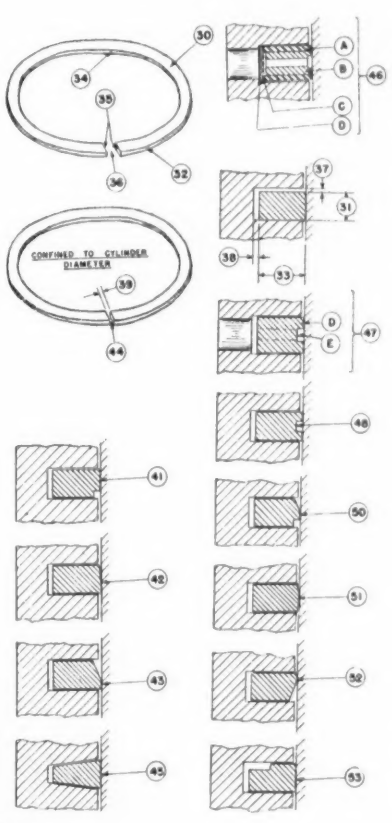
TO end confusion due to differences in names used for pistons and piston rings, the Society of Automotive Engineers has started a project for standardizing piston and ring nomenclature. Suggested standard names and dimensional terms have been published in the November issue of the *SAE Journal* and, after comments have been received, will be submitted to the Gasoline Engine and Diesel Engine Divisions. These divisions will then submit a final recommendation to the SAE General Standards Committee for approval and publication in the 1944 *SAE Handbook*. A tentative list of the proposed standard names has already been submitted to the vehicle, engine, and accessory manufacturers of the industry.

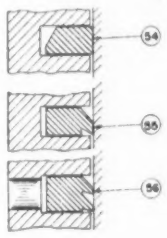
For the information of those interested, the proposed standard names are reproduced here. Comments should be addressed to the Society of Automotive Engineers, 29 West 39th Street, New York 18, N. Y.











PROPOSED NAMES

2. HEAD
3. TOP LAND
4. 2ND LAND
5. RING GROOVE BOTTOM
6. 3RD LAND
7. CHAMFER
8. HORIZONTAL SLOT
9. PIN BOSS
10. PISTON PIN
11. PIN HOLE
12. SKIRT RING GROOVE
14. BOTTOM RIB
15. RING GROOVE PAD
16. MAJOR THRUST FACE
17. SKIRT
18. SKIRT RELIEF
19. VERTICAL SLOT
20. OIL DRAIN HOLES
21. RING BELT
22. RING GROOVE SIDE
23. OIL RING GROOVE
24. 2ND RING GROOVE
25. TOP RING GROOVE
26. HEAT DAM
58. PIN BUSHING
59. T-SLOT
60. U-SLOT
62. MINOR THRUST FACE
63. SLIPPERS

PROPOSED DIMENSIONAL TERMS

1. LAND DIAMETER
29. GROOVE BOTTOM DIAMETER
40. LAND CLEARANCE
57. MINOR DIAMETER
68. GROOVE DEPTH
69. GROOVE WIDTH
70. MAJOR DIAMETER

PROPOSED NAMES

30. SIDE
32. FACE
34. BACK
35. ENDS
36. FREE GAP
41. SCRAPER
42. TAPER FACE
43. BEVEL
44. COMPRESSED GAP
45. KEYSTONE
46. MULTIPIECE
    A. RAIL
    B. VENTILATED SPACER
    C. EXPANDER
    D. SHIM
47. VENTILATED OIL (DRILLED OR SLOTTED)
    D. FLANGE
    E. CHANNEL
48. GROOVED
50. BEVEL SCRAPER
51. DOUBLE TAPER
52. INVERTED BEVEL
53. COUNTERBORED
54. INSIDE BEVEL
55. SINGLE HOOK
56. DOUBLE HOOK

PROPOSED DIMENSIONAL TERMS

31. WIDTH
33. WALL
37. SIDE CLEARANCE
38. BACK CLEARANCE
39. END CLEARANCE

New Foreign Standards Now in ASA Library

Great Britain

Schedule of Cast Iron Drain Fittings, Spigot and Socket Type (For use with drain pipes made according to BS437:1933) BS1130:1943
Test Sieves BS410:1943

Canada

Blackout Flashlights and Lanterns CESA/ARP No. 506
Traffic Control During Blackouts CESA/ARP No. 508.

New Zealand

Emergency Standard Specifications

Aluminium Alloy "Y" Alloy NZSS E.131
Aluminium-Powder (Aluminium-bronze-powder) NZSS E.132
Book Papers, Fine Writing Papers, Chemical Wood Pulp Tablet Paper, White Wove Envelope Paper (Excluding Extra Strong Sulphate) NZSS E.136
Cotton Mops NZSS E.137
Grades of Meat for Sale on the Local Market, and Definitions of Joints and Cuts NZSS E. 79
Ingot Tin NZSS E.142
Men's Working Garments NZSS E.139
Nylon Toothbrushes NZSS E.84
Oxalic Acid NZSS E.128
Paraffin Wax NZSS E.141
Pure Concentrated Ammonia Solution NZSS E.109
Soaps NZSS E.118
Steel Sheets for Transformers NZSS E.4
Terne-Plate (Long Ternes) NZSS E.143
Turpentine NZSS E.129

ASA Standards Activities

American Standards

Standards Available Since Our December Issue

Carbonizable Substances in Paraffin Wax, Test for American Standard Z11.50-1943 25¢
Carbonizable Substances in White Mineral Oil (Liquid Petrolatum) American Standard Z11.49-1943 25¢
Carbon-Silicon Steel Plates of Ordinary Tensile Ranges for Fusion-Welded Boilers and Other Pressure Vessels (Revision of G31.1-1942) American Standard G31.1-1943 25¢
Electrolytic Copper Wire Bars, Cakes, Slabs, Billets, Ingots and Ingot Bars (Revision of H17.2-1942) American Standard H17.2-1943 25¢
Letter Symbols for Gear Engineering American Standard B6.5-1943 25¢
Low Tensile Strength Carbon-Steel Plates of Flange and Firebox Qualities (Revision of G30.1-1942) American Standard G30.1-1943 25¢
Low Tensile Strength Carbon-Steel Plates of Structural Quality for Welding (Revision of G40.1-1942) American Standard G40.1-1943 25¢
Shafting and Stock Keys (Revision of B17.1-1934) American Standard B17.1-1943 45¢
Spindle Noses and Arbors for Milling Machines American Standard B5.18-1943 25¢
Tool Shanks and Tool Posts for Lathes, Planers, Shapers, Boring Mills, and Turret Lathes (Revision of B5b-1929) American Standard B5.2-1943 35¢
Vapor Pressure of Petroleum Products (Reid Method), Test for (Revision of Z11.42-1942) American Standard Z11.44-1943 25¢
Viscosity-Temperature Charts for Liquid Petroleum Products (Revision of Z11.39-1939) American Standard Z11.39-1943 75¢

Standards Approved Since Our December Issue

Allowable Concentration of Oxides of Nitrogen American Standard Z37.13-1944
Building Code Requirements for Masonry A41.1-1944
Dropping Point of Lubricating Grease, Test for American Standard Z11.51-1943
Food-Storage Volume and Shelf-Area of Automatic Household Refrigerators, Method of Computing American Standard B38.1-1944
Household Electric Refrigerators (Mechanically Operated), Test Procedures for American Standard B38.2-1944
Sampling and Analysis of Coal and Coke (Revision of K18.1-1942) American Standard K18.1-1944
Standardization in Field of Photography Z38
Dimensions for
Industrial X-ray Sheet Film Z38.1.25-1944
Graphic Arts Sheet Film Z38.1.26-1944
Medical X-ray Sheet Film (Inch and Centimeter Sizes) Z38.1.27-1944
Photographic Dry Plates (Inch Sizes) Z38.1.30-1944
Standardization in the Field of Photography—(Continued)
Photographic Dry Plates (Centimeter Sizes) Z38.1.31-194
Professional Portrait and Commercial Sheet Film (Centimeter Size) Z38.1.30-1944
Professional Portrait and Commercial Sheet Film (Inch Sizes) Z38.1.29-1944
Zinc Coated
(Galvanized) Iron or Steel Barbed Wire American Standard G8.10-1944
(Galvanized) Iron or Steel Farm-Field and Railroad Right-of-Way Wire Fencing American Standard G8.9-1944
(Galvanized) Iron or Steel Telephone and Telegraph Wire (Revision of G8.3-1935) American Standard G8.3-1944
Steel Wire Strand (Class B and Class C Coatings) American Standard G8.11-1944

Standards Being Considered by ASA for Approval

Administrative Requirements for Building Codes A55.1
Allowable Concentrations of Toxic Dusts and Gases Z37
Carbon Tetrachloride Z37.17
Formaldehyde Z37.16
Methanol Z37.14
Oxides of Nitrogen Z37.13
Basic Sulfate White Lead (ASTM D82-42T) Revision of American Standard K7-1941
Chemical Analysis of Alloys of Lead, Tin, Antimony and Copper (ASTM B18-36T) Revision of American Standard K5-1922
Copper-Base Alloy Forging Rods, Bars and Shapes (ASTM B124-42T) Revision of American Tentative Standard H7-1939
Electrical Insulating Materials C59
Laminated Phenolic Products Standards C59.16
Machining and Punching of Laminated Phenolic Plate, Practice for C59.17
Molded Materials Used for Electrical Insulation, Methods of Testing Revision of C59.1-1943 (ASTM D48-42T)
Sheet and Plate Materials Used in Electrical Insulation Methods of Testing Revision of American Standard C59.13-1943 (ASTM D229-42)
Shellac Used for Electrical Insulation, Methods of Testing C59.18 (ASTM D411-42)
Rotation, Connections and Terminal Markings for Electrical Apparatus Revision of American Standard C6-1938

Standards Submitted to ASA Since Our December Issue

Approval Requirements for Gas Water Heaters Revision of Z21.10-1941
Listing Requirements for Gas Valves Revision of Z21.15-194
Electrical Insulating Materials
Impact Resistance of Plastics and Electrical Insulating Materials, Tentative Methods of Test for (ASTM D256-43T)
Electrical Insulating Oils, Standard Methods of Testing (ASTM D117-43)

American War Standards

War Standards Approved and Published Since Our December Issue

Crystal Unit CR-1 ( ) AR/75 C75.11-1944
Electrical Indicating Instruments (2½- and 3½-Inch, Round, Flush-Mounting, Panel-Type) C39.2-1943 50¢
External Ammeter Shunts for Panel-Type Instruments C39.5-1943 25¢

War Standards Approved Since Our December Issue

Leather Aprons Z51.1-1944
Leather Cape Sleeves and Bibs Z51.2-1944
Leather Leggings (Knee Length) Z51.3-1944

War Standards Approved and Published

Accuracy of Engine Lathes B5.16-1941 25¢

War Standards Approved and Published—(Continued)

Allowable Concentrations of Toxic Dusts and Gases Z37
Cadmium Z37.5-1941 20¢
Manganese Z37.6-1942 20¢
Metallic Arsenic and Arsenic Trioxide Z37.9-1943 20¢
Xylene Z37.10-1943 20¢
Code for Electricity Meters (Revision of Paragraph 827) C12WS-1942 10¢
Color, Specification and Description of Z44-1942 25¢
Domestic Gas Ranges, Approval Requirements Z21.1ES-194 $1.00
Dry Electrolytic Capacitors (Home Receiver Replacement Type) Second Edition C16.7-1943 20¢
Electrical Measuring Instruments C39
Shock-Testing Mechanism for Electrical Indicating Instruments (2½- and 3½-Inch, Round, Flush-Mounting, Panel-Type) C39.3-1943

War Standards Approved and Published—(Continued)
Electrical Measuring Instruments—(Continued)
- Dimensions for External Radio-Frequency Thermocouple Converters (120 Milliamperes to 10 Amperes, Inclusive) C39.4-1943

Gas Water Heaters, Approval Requirements Z21.10WS-1942 $1.00
Machine Tool Electrical Standards C74-1942 40¢
Military Radio Equipment and Parts C75
- Ceramic Radio Insulating Materials, Class L C75.1-1943 20¢
- Ceramic Radio Dielectric Materials, Class H C75.4-1943 20¢
- External Meter Resistors (Ferrule Terminal Styles) C75.5-1943 25¢
- Fixed Ceramic-Dielectric Capacitors C75.12-1944 35¢
- Fixed Composition Resistors C75.7-1943 60¢
- Fixed Mica-Dielectric Capacitors C75.3-1943 50¢
- Glass Radio Insulators C75.8-1943 50¢
- Glass-Bonded Mica Radio Insulators C75.6-1943 25¢
- Porcelain Radio Insulators C75.14-1944 50¢
- Steatite Radio Insulators C75.2-1943 50¢

Photographic Exposure Computer Z38.2.2-1942 $1.00
Pressure Ratings for Cast-Iron Pipe Flanges and Flanged Fittings, Class 125 B16a1-1943 10¢
Pressure-Temperature Ratings for Steel Pipe Flanges, Flanged Fittings and Valves (Revision of Tables 6 to 11 inclusive, American Standard B16e-1939) B16e5-1943 25¢
Protective Lighting for Industrial Properties A85-1942 50¢
Quality Control Z1
- Guide for Quality Control Z1.1-1941
- Control Chart Method of Analyzing Data Z1.2-1941

(In one Volume 75¢)
- Control Chart Method of Controlling Quality During Production Z1.3-1942 75¢

Protective Occupational Footwear Z41
- Men's Safety-Toe Shoes Z41.1-1943 (2nd edition)
- Men's Conductive Shoes Z41.3-1943
- Men's Explosives-Operations (Non-sparking) Shoes Z41.4-1943 (2nd edition)
- Men's Electrical-Hazards Shoes Z41.5-1943 (3rd edition)
- Men's Foundry (Molders) Shoes Z41.6-1943 (3rd edition)

(In one Volume 40¢)
- Women's Safety-Toe (Oxford) Shoes Z41.2-1943 (3rd edition)
- Women's Safety-Toe (High) Shoes Z41.7-1943 (2nd edition)
- Women's Explosives-Operations (Non-sparking) Shoes Z41.8-1943 (2nd edition)
- Women's Conductive Shoes Z41.9-1943 (2nd edition)

(In one Volume 40¢)

Replacement Parts for Civilian Radio C16
- Dry Electrolytic Capacitors (Home Receiver Replacement Type) C16.7-1943 20¢

War Standards Approved and Published—(Continued)
Replacement Parts for Civilian Radio—(Continued)
- Fixed Paper-Dielectric Capacitors (Home Receiver Replacement Type) C16.6-1943 20¢
- Home Radio Replacement Parts, Simplified List C16.8-1943 20¢
- Power and Audio Transformers and Reactors (Home Receiver Replacement Type) C16.9-1943 25¢

Straight Screw Threads for High-Temperature Bolting B1.4-1942 25¢

War Standards Under Way

Allowable Concentrations of Toxic Dusts and Gases Z37
- Styrene Monomer Z37.15

Color Code for Lubrication of Machinery Z47
Cylindrical Fits B4
Machine Tool Electrical Standards Revision of C74-1942
Military Radio Equipment and Parts C75
- Capacitors
  - Fixed Paper-Dielectric Capacitors (Hermetically Sealed in Metallic Cases) C75.16
- Dynamotors C75.13*
- Resistors
  - Power-Type Wire-Wound Rheostats C75.18
  - Variable Wire-Wound Resistors (Low Operating Temperature) C75.10
- Toggle Switches C75.15

Packages for Electronic Tubes Z45
Photography and Cinematography Z52
Protective Occupational (Safety) Clothing Z51
- Leather Welding Coats Z51.4
- Leather Overalls Z51.5
- Leather Welding Sleeves Z51.6
- Leather Gauntlet Gloves Z51
- Coated or Impregnated Textile Aprons (for Protection against Corrosive Material)

Replacement Parts for Civilian Radio C16
- Volume Controls (Home Receiver Replacement Type) C16.10

Resistance Welding Equipment, Specifications for Design and Construction C52
Safety in Electric and Gas Welding and Cutting Operations Z49
Screw Threads B1
- Acme Screw Threads for Special Purposes B1.5
- Truncated Whitworth Screw Form B1.6

Women's Industrial Clothing L17
- Dresses L17.1 and L17.4
- Slacks, Overalls, and Coveralls L17.2
- Jackets, Shirts, and Aprons L17.3

New Project Authorized

Coordination of Electrical Graphical Symbols

News of ASA Projects

Coordination of Graphical Symbols Used in Electrical Engineering Z32

A conference was held on January 22 to consider a Proposed American War Standard to coordinate graphical symbols used in electrical engineering. The proposed American Standard agreed on by the conference is being sent to letter ballot of those concerned before being considered by the ASA for approval.

Practice in Public Approval and Certification Procedure Z34

Corrections have been made and a new foreword added to the Proposed American Standard Practice in Public Approval and Certification Procedure. There has been some further action by the committee although the standard has not yet been approved.

Protective Occupational Clothing Z51

The first three leather-garment specifications have been approved and three more have been sent out to canvass—Leather Coats (Z51.4); Leather Overalls (Z51.5); Leather Sleeves (Z51.6). A meeting of the full War Committee, Z51, will be held on February 10 to plan future work, review tentative specifications, and to receive reports from subcommittees. The subcommittee on hand-protection will hold a meeting in New York on February 9. On February 11, a meeting of the committee on leather and asbestos clothing will be held. Specifications for clothing to be used in powder plants will be discussed at a subcommittee meeting on February 4.

Protective Occupational Footwear Z41

There was a meeting of the Committee on Protective Occupational Footwear on February 2 and 3 in Washington, D. C. The members considered possible revisions to standards which are incorporated in WPB Order 217.

Standardization in the Field of Photography Z38

The Sectional Committee on Standardization in the Field of Photography (Z38) met February 4 to consider standards on Threads for Attaching Mounted Lenses to Photographic Equipment (Z38.4.0) and Attachment Thread Specifications for Lens Accessories (Z38.4.P).

Standards for Safety in the Construction Industry A10

On January 12, the first meeting in years was held by the full committee of A10 to consider the third draft of the American Standard Safety Code for Building Construction and also certain controversial items which had developed as a result of a letter ballot taken last summer. The revised draft will be sent to letter ballot of the sectional committee.

Woodworking O1

A revision of the code has just been completed and submitted for approval to the Safety Code Correlating Committee for recommendations to the Standards Council.

If you use

JACKS

you should know about

the

American Standard

Safety Code for Jacks

(B30.1-1943)

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per copy

THIS CODE PROVIDES FOR THE SAFE OPERATION OF:

jacks with a capacity of over one ton
portable, manually operated
JACKS

lever and ratchet
screw
hydraulic
JACKS

This code provides reasonable safety for persons and property. It may be used as a guide for manufacturers, users, and regulating authorities.

The great increase in the use of jacks makes this code important in helping to cut accidents.

DEVELOPED UNDER THE TECHNICAL LEADERSHIP OF:

American Society of Mechanical Engineers
Bureau of Yards and Docks, U. S. Navy Department

Order from:

American Standards Association

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